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BIRDS I HAVE KNOWN NEW YORK

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MEADOWLARK

Order—PASSERES
Genus—STURNELLA

Family—ICTERIDÆ
Species—MAGNA

National Association of Audubon Societies

BIRDS I HAVE KNOWN

BY

RICHARD HARPER LAIMBEER

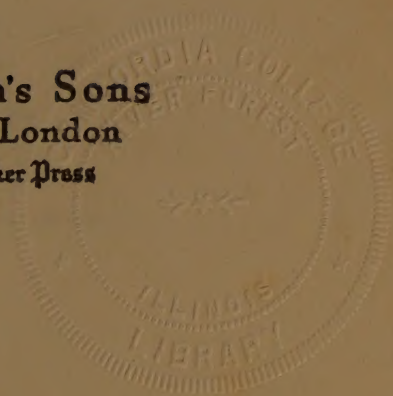
*ILLUSTRATED WITH 50 COLORED PLATES,
AND WITH 48 SNAPSHOTS FROM LIFE
BY THE AUTHOR*

G.P. Putnam's Sons

New York & London

The Knickerbocker Press

1923



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To
A TOWHEE
I ONCE KNEW

PREFACE

PROBABLY on the theory that it is much easier to announce what we are going to say than it is to say it, most authors indulge in a sort of preliminary canter in the guise of a preface, introduction, or foreword in which the purpose of the writer is seriously set forth and the reader generously informed of the nature of the literary feast of which he is about to partake, this advance information serving the double purpose of disclosing at the outset what otherwise might not be discovered, and of providing the expectant reader with the necessary amount of hope and encouragement without which his task would perhaps remain uncompleted. With the sanction therefore of established precedent, but without any of that sense of responsibility which a declaration of such importance should no doubt impose, the reader is here informed that in submitting the following pages concerning the lives and habits

of some of the birds commonly seen on Long Island, my purpose is both humane and economic; humane because my plea on behalf of the birds is an appeal to all that is good and kind and generous, and economic because I believe bird conservation necessary in the protection of our own interests.

No pretense is made at qualifying as an authority on nature study nor are any rules governing the study and observation of bird life arbitrarily prescribed for use by others. Approval or disapproval of stated conditions or of methods used, simply reflects my own opinion.

So numerous are the publications containing most interesting pictures of birds in their homes, that the snapshots taken by me are limited to those illustrating the confidence and trust reposed by some of the birds during the process of study and observation, and are submitted with no claim of unusual photographic or artistic merit. Nor has any attempt been made at literary embellishment, and if the personal pronoun is much in evidence it is because it has not seemed possible to eliminate this feature and yet tell the story in my own way.

I am indebted to the National Association of Audubon Societies for the privilege of presenting the colored plates used, and to the Bureau of Biological Survey, Department of Agriculture at Washington,

and to Captain Ezra S. Mott of Port Jefferson, New York, for statistical data presented.

RICHARD HARPER LAIMBEER.

305 Broadway,
New York City.
August, 1923.

ERRATA

Page 191, line 10. *For* leaves *read* leave.

Page 232, line 15. *For* hatched out *read* hatched.

Page 367, line 6. *For* three hatched out, one egg in
nest *read* three hatched.

Page 367, line 7. *For* hatched out *read* hatched.



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Birds I Have Known

Birds I Have Known

CHAPTER I

Equipment for study and observation. How an active interest was stimulated. Base of operations. Bird Diary. Housing attractions provided.

HAVING for some years spent much of my time on that part of Long Island vaguely described as "within commuting distance" where the opportunities have been many for watching the song birds both in the woods and in the open, I long ago yielded to the charm of the beautiful music they carry with them wherever they go and became a close and interested observer of their appearance and habits.

With an increase of interest came the natural desire for a closer acquaintance than that afforded by casual visits to their homes in the woods, and resolving to devote to them as much of my spare time as possible, I resurrected a good field glass through which I had, disappointingly at times, viewed many contests over courses circular, elliptical,

and straight away, and thus fortified in the way of equipment, my work of observation and study was begun. Even with this companion in my rambles through the woods, it was most difficult to identify birds and examine nests from a distance as was sometimes necessary. I confess a glass has never been of very much use to me in the thickly wooded country except in the Spring and Autumn when the foliage is light and even then the trunks and branches of the trees, to say nothing of the bushes and small growth, have persisted in getting between the eye and the object sought. It is of some help however, even under these conditions and in sparsely wooded territory, as in the open, it is an invaluable aid.

My investigations were continued under these disadvantages which were of course incidental and to be expected, and in the meantime a small tin box easily carried in the pocket and containing corn bread or some article of food to which birds are partial, was added to my equipment, proving very handy in establishing friendly relations with my newly made acquaintances while in the woods and away from my base of supplies. When, therefore, the birds afterward appeared on the grounds in the near vicinity of the house, seemingly in a friendly mood and inclined to avail themselves of some of the comforts provided for their use, the possibility of



Renewing an Old Acquaintance



TOPOGRAPHY OF A BIRD

Drawn by Louis Agassiz Fuertes for "Birds I Have Known"

being able to observe them under more intimate and more favorable conditions was very encouraging and they were received with as cordial a welcome as it was possible to extend. From that time on they were frequent visitors and much of my study of the birds themselves has been made in the open and at comparatively close range.

By this time a camera of ancient vintage had been added to, and completed, my sporting outfit, and it was while examining this, and while the instrument was pointed at one of the most inquisitive and venturesome of my bird visitors that the release was accidentally pressed and the shutter snapped. To my surprise a local photographer to whom the film was given to be developed, produced a very natural looking, if a trifle blurry object, which, the light in the room being rather poor and the print being inadvertently held upside down, he pronounced with no apparent effort at sarcasm, a "most remarkable picture," thus establishing at one bound, or more accurately speaking, at one snap, my reputation as a photographer of wild birds.

It is most regrettable that the record of my early youth contains no reference, authentic or otherwise, to my intense love of nature, or to the fact that when not engaged in the performance of school or home duties, my time was spent in communing with the

birds or in pining for the brooks and rills with their alluring promise of nature study, statements which, if true, would support many exploited book theories and would harmonize well with much of the interest manifested later in life. As a matter of fact no interest whatever in the welfare of the bird tribe was ever disclosed by me, and if the birds did receive any of my personal attention, it was doubtless in connection with the operation of a bean shooter or in an attempt to rob a nest. This is not an autobiographical sketch however, and it is sufficient to state that my interest in the little songsters developed within recent years, and was brought about in the following manner.

A daily commuter between my home and my office in New York, it was my habit to leave the house at a quarter before seven o'clock in the morning when a short drive through the woods brought me to the railroad station. Bob-white, Towhees, Robins, Brown Thrashers, Catbirds, Warblers, Wrens and other birds were seen in plenty and provided a wonderful concert all the way to the depot. The drive at that hour of the morning during the late Spring and early Summer was a veritable riot of music. In the succeeding years the number of birds met with on our daily trip was noticeably fewer and the sound of the music fainter than usual, and this

was not due to weather conditions for the preceding winters had not been particularly severe ones, the light fall of snow making it possible for the birds to subsist without any help from kind neighbors. Later, when I had ceased to commute regularly, it was even more noticeable that the number of Robins and Bob-white in evidence had materially decreased, until last year, with a mild winter preceding, scarcely any Bob-white were seen or heard, not one appearing on the grounds near the house. Inquiry and investigation satisfied me that many of the Robins had been killed, and that the Bob-white had been hunted during the closed season and ruthlessly destroyed. It was a knowledge of these conditions that made me a bird protector as well as a bird lover and from the time of conversion my surrender has been complete.

All books, pamphlets, leaflets and proposed legislative enactments relating to birds, that came under my notice and which were available, were devoured by me until I became fed up with bird literature and propaganda, and the fund of information handed out on "What Birds Should Eat," "What the Birds Think" and "How Birds Should Fly" has made me wonder how in the world the poor birds ever got along before all this scientific knowledge became public information. Then too, it had been my privilege to see some of the songsters almost daily for

weeks at a time and to discourse upon their habits and characteristics on all possible occasions with neighbors or acquaintances who, if not exactly enthusiastic on the subject, politely affected a proper degree of interest and listened patiently, if not attentively. Notwithstanding the difficulties met with in securing at all times a sympathetic and appreciative audience, and still keen on the chances of enlisting others in the war opposed to the extinction of these birds, I propose to refer to some of my experiences and observations and to offer such comment or suggestion as may seem pertinent or of use. For the better understanding of what follows, a brief description of general conditions under which my observations have been conducted would appear helpful and are given here.

A house, located on the shore front, near the water, in the center of cleared ground and surrounded by wooded land constituted my base of operations. The woods contain a variety of oak trees and an assortment of elm, hickory, maple, pine, cedar, spruce and dogwood, while a number of good sized oaks each of which is adorned with a bird box of more or less original design, dot the lawn surrounding the house, with bushes, shrubs, and vines for which some of the birds disclose a distinct liking, scattered about. Bird baths, drinking cups, and feed box are all



Feeding Station near the Front Porch



Bird Rest, for Birds Desiring to Build in Partly Sheltered Position

located in plain view within ten feet of the house. It is within this space of ten feet and on the porch of the house that a close up study of many of the birds has been made and where most of the snapshots have been taken.

By the first of April in each year, the bird boxes not taken down and cleaned out in the Autumn, have been overhauled and placed in position by "Henry," the colored man in charge of the place, who knows the birds in the County so well that he calls them all by their first names, and prospective bird tenants are at this time flying here and there busily engaged in inspecting the ready-made quarters and getting ready to move in when suited. At first the birds to avail themselves of the bathing and drinking accommodations are few, only Chipping Sparrows, Blue Jays and Robins appearing near the house, until about the middle of April. Then come the Wrens, Song Sparrows, Brown Thrashers, Towhees, Catbirds, Orioles, Black and White Warblers, Vireos, Bluebirds and the rest, until about the twentieth of May when the list of those summering with us as well as those visiting the grounds, is practically complete, and the season is on. Last season was later than usual by about a week, owing, no doubt, to cold weather, though the different years will average up about the same.

A daily record with a weekly summary of events has been kept by me for several years in which general weather conditions, the arrival of the birds, the use of bathing, drinking and feeding facilities, the occupation of bird boxes, the location of nests, characteristics observed during the mating and nesting season, and other details are noted, providing a ready and reliable method of comparing events and conditions of one year with those of another and of checking up theories and results.

The matter of housing is usually the first thought of those seeking to attract birds, though I would place it third in the order of importance, as the number making use of a prepared shelter is comparatively small. My opinions on this subject, as on some other features of bird study, are not altogether in accord with some writers whose views are entitled to respect and credence, my only comment on this being that my premises are based upon personal observation and the study of many birds under varying conditions and my conclusions appear to me to be logical.

Attention has already been called to the fact that to each of the oak trees referred to in the description of my base of operations as being in the open, a bird house or box is attached. There are, in addition to a Martin apartment house, a dozen or more of these

one family houses, most of them of home design and home built, the first one located consisting of a reconstructed starch box placed on the stump of a tree recently blown down and cut off to within about seven feet of the ground. This was promptly occupied by a family of Wrens. The next house, one purchased and donated by a friend who visits us each summer, was placed in a tree within twenty feet of the front porch and soon another Wren family, after careful inspection, moved in. Emboldened by the quick rental of both of these houses, another one of the home-made variety was installed and was taken possession of by a family of Bluebirds who were soon busy carrying bits of dry grass to their new home. As the nest was but twenty-five feet from our house, their operations were easily observed and to our surprise, they both vacated, after partly building a nest. Thinking that perhaps the entrance to the house was too near the floor level, a house in an adjoining tree was taken down, the entrance elevated, leaving a deeper space between the bottom of the box and the hole, and the house replaced in position. Within twenty minutes of the time it was taken down, it was replaced, and within fifteen minutes after that the same family of Bluebirds moved in, carrying the nesting material already gathered by them, from the old house to which they had taken it.

They evidently preferred a high stoop dwelling for there they remained. A tin cracker box remodelled was soon occupied by tree swallows that remained during the summer and raised an interesting family.

After this there was a spurt in the building trade and "Henry" provided an assortment of shelter boxes which were at once put up. A round tin box which originally cost seventeen cents including the crackers, with a slanting roof made from a piece of shingle, and with a hole cut in one side near the top was given a coat of paint and made a very good home for Bluebirds. A round thick cardboard container, was also given a shingle roof, a wooden base, a coat of paint, and a hole near the top. Both of these improvised shelters and two bought houses were placed in position at the same time with the result that in both cases the home product was selected, one by a discriminating Downy Woodpecker and the smaller one by a Bluebird. The preference of the birds for the cracker tin and cereal box is not noted for the purpose of indicating the superiority of one shelter over the other, but to emphasize the fact that at little, or no cost, the necessary covering may be provided and that no one need neglect this feature because of the expense involved. Nor is it any excuse that the material is not handy or that you do not want to bother with it, for there are several business



Supply Station Containing Materials for Nest Building



Starch Box on Tree Stump, Occupied by Wrens with Seven Young

concerns which advertise and make excellent bird houses and who will deliver them at your door. This applies also to devices intended to add to the comfort of birds and which are favored by some bird students. One of our double houses was occupied for a time by Martins, and one by Bluebirds, and a colony of Starlings and Cowbirds took temporary possession of such of the houses as, owing to the size of the entrance, would admit them. They attempted to occupy another house already sheltering a family of seven squirrels, two adults and five youngsters, but were beaten off and finally the entire colony withdrew, not however, before the whole bird settlement was thoroughly aroused and pretty well frightened.

These little shelters serve their purpose in many cases and the wonder is that they are not more often made use of. It seems odd, for example, that a Robin will build her nest in a cedar tree, and a scraggly cedar tree at that, exposed to severe wind and rain, when she can just as well build in a Rest provided for her on a nearby tree where she will get fair weather protection; but she builds in the tree just the same and sits on her nest hour after hour exposed to heavy wind and pouring rain, apparently from choice. Perhaps after all the birds know, even better than do the books, what they want and this is why these

aids to comfort are utilized by comparatively few. Why not give them what they want where it is possible to do so? Let them build where they want to build and help them to do so by making their natural home, the woods, more attractive and more suitable for home building. In other words leave the woods alone. This does not mean the maintenance of either a fire hazard or a nuisance. Have the oil cans, rags, old newspapers, sardine boxes and the like that have been placed there by picnicking tourists or campers removed; and if, owing to topographical conditions, stagnant water accumulates in sufficient quantity to breed mosquitoes and other insects, drain it off or do away with it by filling in; otherwise leave at least some part of your wooded land as nature provides for it and spoil the rest of it if you feel any better for doing so. I know this theory will not appeal to those who leave the crowded built-up City for a touch of nature, and then proceed to make the country look as unnatural as possible with sunken gardens, Japanese lanterns and woods from which the small sticks have been removed and the dry leaves carefully swept up, but its practice would help solve the housing problem so far as the birds are concerned.

A few years ago, having received a communication from a tree doctor prophesying all sorts of dire results

unless the woods were subjected to scientific treatment at the hands of one of his profession, I placed some of the larger trees in his care. After he had sawed or broken off most of the branches and had dug numerous holes in the trunks of the trees, which he filled up again with a collection of old nails and cement, it was discovered, of two decayed trees which had been chopped down, that one had been occupied by a Red-headed Woodpecker and the other by a Flicker, for the purpose of housing themselves and their families. The treatment was then and there discontinued, since which time the woods have been let alone and the trees, vines and underbrush now look after themselves. No doubt the failure to doctor these old trees may result in their loss within the next twenty-five years, but on the other hand the number of birds in the woods has already increased, which to my mind is much more desirable than the calculated value of the timber possibly lost.

CHAPTER II

Other comforts provided. Bath. Drinking cups. Box food.
Natural food supply. Fruit bearing shrubs. Economical phase
of bird conservation. Damage occasioned by insects. Insect
destroying birds.

IF I am to list in the order of their importance the features possessing the greatest lure for birds, I shall unhesitatingly place a water supply at the head of the list. Of course, such a rating is an arbitrary one, but water they must have and they will go a long way to find it. Both for drinking and bathing purposes, a small pool sheltered from the sun, on the ground, best answers the purpose, providing always that it is surrounded by an open space of sufficient size to prevent surprise attack from cats, or other enemies. Two of the baths and drinking cups used by me are made of large flower pot saucers placed upon the ground under a weigelia bush of generous proportions which affords shade most of the day. For water, the cellar pipe was tapped and extended outside the house, providing a fresh supply at all times. These baths and cups are almost constantly



of House Wren, with Removable Top and Side of Box Temporarily Detached



Nest of Bluebird, Side and Top of Box Removable and Detached Temporarily

in use in warm weather and are always well patronized. From morning until night Catbirds, Brown Thrashers, Chipping and Song Sparrows, Towhees, Robins, Black and White Warblers, Blue Jays, Wood Thrushes and Orioles take possession of them, and even the Wrens occasionally use them. A raised fountain was last Spring placed in commission within a few feet of the old flower pots, but though it has not been entirely neglected and takes care of the overflow when trade is brisk, the ground supply gets the bulk of the business.

For feeding purposes a raised platform twelve inches square and one inch in height, in the center of which the food is put and which is placed on the ground, has been found very satisfactory and practicable. If the food is placed on the grass, it becomes scattered, dried up with the heat of the sun, or dissipated by the rain, while by using the box or platform, it can easily be moved out of the sun, or protected from the rain and the birds soon become accustomed to its use. Wheat or corn bread, cracked corn, or acorns, seeds, or cake crumbs will do nicely for what I call box food to distinguish it from the natural supply provided in season by the berries, cherries, sumach, sunflowers and grape planted about the grounds and by the choice assortment of bugs, flies, worms and insects with which a well regulated coun-

try place is endowed. In the early Spring and in the Fall and Winter, a piece of suet tied to a limb of a tree by means of a stout cord, is always available and is patronized by the larger birds.

I am not in favor of a supply of box food during the Spring or Summer months unless in case of unusually bad weather when the natural supply cannot easily be found, except for birds who are nesting. These may well be fed from the box, moistened bread furnishing a handy and suitable food at this time and easily fed by the parent bird. In the early Spring we might help out a little as indicated, but later during the Summer and in the Fall when the shrubs, trees, bushes and vines produce their harvest of fruit, berries and seed, the supply is abundant and the birds should be permitted to hustle for themselves. If they get all the "box food" they want at all times and get it easily they may not bother with the worms, caterpillars, bugs and insects which ordinarily they find palatable and which, if left to forage for themselves, they will destroy. The Department of Agriculture furnishes in Farmers' Bulletin, a table in which certain fruit bearing shrubs, vines and trees are noted with the names of the birds attracted by each. The information given is so useful and comprehensive that I have inserted it here as stating in the most concise manner how the various means

adopted for attracting and caring for birds may be supplemented by a natural fruit supply. Plant some of these "invitations" about the place and the result may be noted in a short time. Not only will the number of birds increase, but with a liberal supply of wild fruit, the cultivated variety will be let alone.

TABLE

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS

<i>Common Name</i>	<i>Kinds of birds among those desirable to attract, that are most fond of the fruit</i>
Juniper, red color.....	Yellow-shafted flicker, starling, evening grosbeak, pine grosbeak, purple finch, cedar waxwing, myrtle warbler, mockingbird, robin, eastern bluebird.
Greenbrier.....	Cardinal, mockingbird, brown thrasher, catbird, hermit thrush, robin.
Bayberry.....	Bob-white, downy woodpecker, yellow-shafted flicker, eastern phoebe, starling, meadowlark, chewink, tree swallow, white- eyed vireo, myrtle warbler, brown thrasher, catbird, Caro- lina wren, black-capped chicka- dee, hermit thrush, eastern bluebird.
Hackberry.....	Yellow-bellied sapsucker, yellow- shafted flicker, starling, cardinal, cedar waxwing, mockingbird, brown thrasher, robin, eastern bluebird.

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS—*Cont'd*

<i>Common Name</i>	<i>Kinds of birds among those desirable to attract, that are most fond of the fruit</i>
Mulberry.....	Yellow-billed cuckoo, red-headed woodpecker, red-bellied woodpecker, downy woodpecker, kingbird, starling, Baltimore oriole, orchard oriole, cardinal, purple finch, scarlet tanager, cedar waxwing, red-eyed vireo, yellow warbler, mockingbird, catbird, wood thrush, robin.
Pokeberry.....	Mourning dove, yellow-shafted flicker, kingbird, starling, cardinal, mockingbird, catbird, hermit thrush, gray-checked thrush, olive-backed thrush, robin, eastern bluebird.
Spicebush.....	Kingbird, red-eyed vireo, wood thrush, veery.
Sassafras.....	Bob-white, kingbird, red-eyed vireo, catbird, veery, robin.
Strawberry.....	Towhee, catbird, brown thrasher, wood thrush, robin.
Raspberry, blackberry.....	Ruffed grouse, bob-white, red-headed woodpecker, yellow-shafted flicker, kingbird, starling, Baltimore oriole, orchard oriole, pine grosbeak, song sparrow, fox sparrow, white-throated sparrow, chewink, California towhee, spurred towhee, cardinal, rose-breasted grosbeak,



of Tree Swallow in Box with Removable Top and Side Temporarily Detached



Cardboard Container Occupied by Downy Woodpecker

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS—*Cont'd*

*Kinds of birds among those desirable
to attract, that are most
fond of the fruit*

Common Name

black-headed grosbeak, cedar
waxwing, red-eyed vireo, mock-
ingbird, catbird, brown thrasher,
tufted titmouse, wren-tit, olive-
backed thrush, wood thrush,
robin, eastern bluebird.

Rose.....Ruffed grouse, sharp-tailed grouse,
prairie chicken, bob-white.

Mountain ash.....Red-headed woodpecker, Balti-
more oriole, evening grosbeak,
pine grosbeak, cedar waxwing,
bohemian waxwing, catbird,
brown thrasher, robin.

Chokeberry.....Meadowlark, brown thrasher.

Red haw.....Ruffed grouse, pine grosbeak,
purple finch, robin.

Dwarf apples.....Ruffed grouse, ringneck pheasant,
red crossbill, pine grosbeak,
purple finch, cedar waxwing,
mockingbird, robin.

Juneberry.....Yellow-shafted flicker, Baltimore
oriole, cedar waxwing, catbird;
hermit thrush, veery, robin.

Wild cherry.....Ruffed grouse, bob-white, mourn-
ing dove, red-headed wood-
pecker, yellow-shafted flicker,
kingbird, starling, bullock oriole,
Baltimore oriole, orchard oriole,

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS—*Cont'd*

*Kinds of birds among those desirable
to attract, that are most
fond of the fruit*

Common Name

evening grosbeak, purple finch,
rose-breasted grosbeak, black-
headed grosbeak, Louisiana
tanager, red-eyed vireo, cedar
waxwing, mockingbird, catbird,
brown thrasher, olive-backed
thrush, wood thrush, robin,
eastern bluebird.

Sumac.....Ruffed grouse, bob-white, valley
quail, downy woodpecker, red-
bellied woodpecker, red-shafted
flicker, phoebe, starling, gold-
finch, golden-crowned sparrow,
chewink, white-eyed vireo,
Audubon warbler, mockingbird,
catbird, California thrasher,
brown thrasher, Carolina wren,
black-capped chickadee, Caro-
lina chickadee, wren-tit, hermit
thrush, robin, eastern bluebird.

Pepperberry.....Cedar waxwing, phainopepla,
hermit thrush, varied thrush,
robin.

Holly.....Ruffed grouse, bob-white, valley
quail, yellow-bellied sapsucker,
yellow-shafted flicker, cedar
waxwing, mockingbird, catbird,
brown thrasher, hermit thrush,
robin, eastern bluebird.

Supple-jack.....Mockingbird, robin.

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS—*Cont'd*

*Kinds of birds among those desirable
to attract, that are most
fond of the fruit*

Common Name

Buckthorn.....	Mockingbird, catbird, brown thrasher, robin.
Wild grape.....	Ruffed grouse, bob-white, pileated woodpecker, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, kingbird, starling, cardinal, cedar waxwing, mockingbird, catbird, brown thrasher, wood thrush, veery, robin, western bluebird, eastern bluebird.
<u>Virginia creeper</u>	Red-headed woodpecker, red-bellied woodpecker, yellow-bellied sapsucker, yellow-shafted flicker, starling, evening grosbeak, purple finch, scarlet tanager, red-eyed vireo, mockingbird, brown thrasher, tufted titmouse, hermit thrush, olive-backed thrush, gray-cheeked thrush, robin, eastern bluebird.
Buffaloberry.....	Sharp-tailed grouse, pine grosbeak.
Silverberry, Russian olive, etc....	Sharp-tailed grouse, prairie chicken, cedar waxwing, catbird, robin.
Wild sarsaparilla.....	Bob-white, robin.
Dogwood.....	Ruffed grouse, bob-white, downy woodpecker, yellow-shafted flicker, red-shafted flicker, king-

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS—*Cont'd*

<i>Common Name</i>	<i>Kinds of birds among those desirable to attract, that are most fond of the fruit</i>
	bird, starling, evening grosbeak, pine grosbeak, purple finch, white-throated sparrow, song sparrow, cardinal, cedar wax- wing, warbling vireo, red-eyed vireo, catbird, brown thrasher, hermit thrush, olive-backed thrush, gray-cheeked thrush, wood thrush, robin, eastern bluebird.
Sour gum.....	Yellow-shafted flicker, starling, purple finch, cedar waxwing, gray-cheeked thrush, olive- backed thrush, robin.
Crowberry.....	Pine Grosbeak, snowflake.
Bearberry.....	Ruffed grouse, dusky grouse, valley quail, mountain quail, fox spar- row, wren-tit.
Huckleberry.....	Pine grosbeak, chewink, robin.
Blueberry.....	Ruffed grouse, valley quail, king- bird, orchard oriole, pine gros- beak, chewink, cedar waxwing, catbird, brown thrasher, black- capped chickadee, tufted-tit- mouse, hermit thrush, robin, eastern bluebird.
Mexican mulberry.....	Mockingbird, brown thrasher.
Partridge berry.....	Ruffed grouse.

PREFERENCE OF BIRDS AMONG GENERA OF FLESHY FRUITS—*Cont'd*

*Kinds of birds among those desirable
to attract, that are most
fond of the fruit*

Common Name

Elderberry.....	Valley quail, red-headed wood- pecker, yellow-shafted flicker, eastern kingbird, Arkansas king- bird, black phoebe, starling, California towhee, white- crowned sparrow, rose-breasted grosbeak, black-headed gros- beak, phainopepla, red-eyed vireo, mockingbird, catbird, brown thrasher, California thrasher, wren-tit, olive-backed thrush, robin, western bluebird, eastern bluebird.
Snowberry.....	Sharp-tailed grouse, evening gros- beak, pine grosbeak, varied thrush.
Black haw.....	Ruffed grouse, yellow-billed cuckoo, yellow-shafted flicker, starling, purple finch, rose- breasted grosbeak, cedar wax- wing, catbird, brown thrasher, robin, eastern bluebird.
Honeysuckle.....	Bob-white, pine grosbeak, white- throated sparrow, catbird, brown thrasher, hermit thrush, robin.

This brings us to the question of economics, a phase apparently of little interest, though of the greatest importance.

A very large proportion of those by whom an appeal for bird conservation is favorably received, become interested because of the humane aspect presented and few want to even listen to any argument or contention based upon any other ground, yet in their profession or business they would think it a good proposition if on an investment of time, care and very little, or no financial capital, a substantial profit could be assured. And this is just such a proposition. Economic societies and State and Federal governments have recognized the fact that from the sordid viewpoint of self-interest, the bird is a paying investment, and most of our States have passed suitable protective laws, but the general public concerns itself little with the statement that these birds by their insect destroying habits yearly save the country property of the value of millions and millions of dollars. Statistics are, as a rule, a collection of uninteresting information, but in this connection seem most convincing.

The publications issued by the Department of Agriculture upon this phase of bird conservation would annually require space enough for a good sized book, every word of which might with profit be quoted, and which would prove entertaining and instructive, yet for some reason, perhaps because the information may be had for nothing, the general

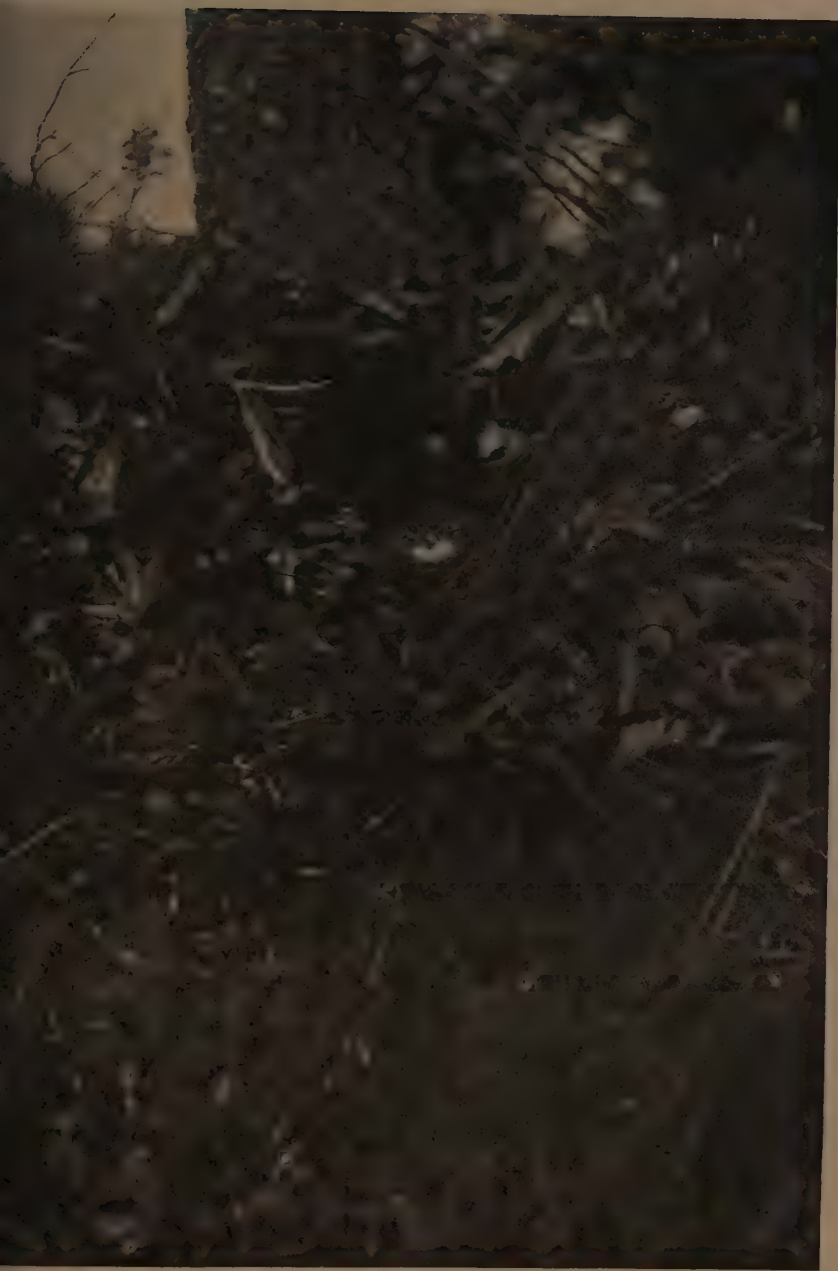
public is not interested. My regret is that I lack room to quote literally from those documents. However, I am only too glad to acknowledge them as the source of my information on the economical phase of the subject, for of course no individual would have the opportunities or facilities for making an equally exhaustive study nor would his conclusions be equally authentic.

Proceeding upon the prosaic, if businesslike theory, that birds are an asset in direct proportion to the number of property destroying insects they eat or kill, the United States Government has expended large sums of money in endeavoring to ascertain the amount of damage done to property by insects and the part played by the bird kingdom in the attempt to exterminate these destructive pests. As a result of its investigations it is shown that in the United States an annual loss of over fifty million dollars occurs in a crop of a single product and that many crops and farm and garden yields show a loss in each crop of millions and millions of dollars. It is estimated that the agricultural interests lose annually over \$700,000,000 through the ravages of insects, notwithstanding the help given by the birds. Fruit growers mark off from fifteen to twenty-five per cent as an insect tax before they begin to figure on the legitimate cost of producing.

To ascertain what help, if any, could be relied upon in combating this enormous loss, the Government has opened the stomach of over 80,000 birds, analyzing carefully the contents of each stomach, an operation productive of highly satisfactory results so far as the Government is concerned whatever the birds may have thought of it. Such analysis shows an incredible number of insects devoured and demonstrates convincingly and beyond dispute the economic value and worth of this insect eating group, for it must be conceded that the contents of the bird's stomach are the very best evidence of what it has eaten though they may vary radically from the diet prescribed and insisted upon by some observers.

When therefore the United States Government with its vast opportunities for research tells us the birds save annually property of the estimated value of millions and millions of dollars and should be protected, that ought to be good enough for us and cause us to fall in behind the Government in its appeal for bird protection.

There is another viewpoint, to be perfectly fair, namely that of the farmer and fruit grower, who will tell you that some of these benefactors are themselves destructive of property. The Crow is an enemy in the corn field no doubt, yet he eats and destroys many noxious insects, bugs and beetles being es-



Nest of Song Sparrow, on the Ground at Foot of Elm Tree, in the Open



Song Sparrow Collecting Food for the Nest

pecially palatable to him. He is a very effective sanitary inspector along the water front as elsewhere, and keeps the shore fairly clear of dead fish, food, decayed fruit and vegetable matter, and of some of the refuse which the yachts in the Harbor or Sound considerately throw overboard to be washed up on the shore and which the Gulls do not dispose of. If he could only be induced to add to his articles of diet bottles and tin cans, the water front would be perfectly taken care of from an esthetic as well as from a sanitary point of view, and even this may become possible, for we had a case within a short distance from us last year in which a Crow swallowed a piece of glass, which gastronomical feat however, caused its death.

Then the Robin and the Catbird are both very fond of cherries and berries and are a bit trying to those whose gardens contain fruit. My neighbor who has a choice selection of cherry trees, raspberry bushes, and other bearers of delicious fruit takes the matter philosophically and arranges to provide twenty per cent more fruit than he wants for his own use, thus allowing for a loss of one fifth of the yield on this account. His man used to spend much of his time chasing the Catbirds and Robins out of the garden, but his wind must have given out for of late I have missed him and have noticed a large covering

of mosquito netting stretched over the raspberry bushes when the berries were ripening. I have reminded my neighbor that without the aid given him by the birds, he probably would not have any fruit at all, which he admits may be the case, conceding that both Robins and Catbirds do excellent work in ridding the garden of worms and bugs which, if let alone, would eat everything except the tin bird houses and the insect powder sold by enterprising dealers. Most birds, in fact so far as I am able to learn, all birds are of some value because of their diet and it has been stated that no class of the many bugs, beetles, worms and parasites of which we have any knowledge, escape their attention.

To just what extent birds prevent damage occasioned by insects in the United States is problematical but our Government officials estimate it at more than \$400,000,000 in value. Forty-five different kinds of birds destroy the alfalfa weevil, forty-three the army worm, sixty-seven the billbug, sixty-six the cotton boll weevil, thirty-one the brown tail moth, sixty-four the chestnut weevil, twenty-four the chinch bug, eighty-five the clover root borer, twenty-five the clover weevil, thirty-six the codling moth, forty-one the cotton worm, ninety-eight the cut worm, thirty-two the forest tent caterpillar, forty-six the gipsy moth, forty-nine the horsefly, one hundred and

twenty the leaf hopper, forty-three the orchard tent caterpillar, twenty-five the potato beetle, twenty-one the rice weevil, thirty-eight the seventeen year locust, twenty-eight the cucumber beetle, sixty-seven the white grub, and one hundred and sixty-eight the wire worm. And the number of insects found in the stomach of the birds does not, of course, include the insects destroyed but not eaten.

CHAPTER III

Devices for attracting. Factors affecting the continued presence of birds. Cat menace. Quiet surroundings. Morning classes. Confidence of birds shown. Photographic reproduction of intimate situations frequently difficult.

OF the utility of the many devices recommended for attracting birds I am not convinced, though some are of great help during the Winter when food, drink and shelter are not easily found. In the Spring and Summer the problem of caring for them is, of course, much easier. A box containing pieces of old string excelsior, cotton, old lint and wire grass has been placed in position by me each year about April 1, in advance of the nesting season in the hope of its being useful, but so far as my observation goes it has not been made use of except in the case of a few strips of old paper taken from a packing box and some bits of string and yarn which found a customer. As an experiment, and to satisfy myself that the material furnished by me was perhaps as desirable as any other, a nest material box with an assortment of nesting material was purchased by me of one of



Song Sparrow Chaperoned at Luncheon by Female Towhee



One of the Regular Attendants at Morning Class

the prominent dealers and placed in commission in April before nesting season had begun. It did no more business however, than did the one formerly installed. In May the Robin got her dried grass and damp earth from the ground within ten feet of the nest boxes, and none of the other birds, so far as I could see, took any notice of the special assortment of material provided by either box. Two boxes, both sides of which are exposed, in fact boxes without any sides, were placed, one on a tree and one on the side of the house, to entice those looking for a ready made foundation for a nest and partial protection from the rain and wind, and I really had hopes that maybe one of the many Robins about the house would build here, but neither box, which dealers would call a "rest box" was utilized.

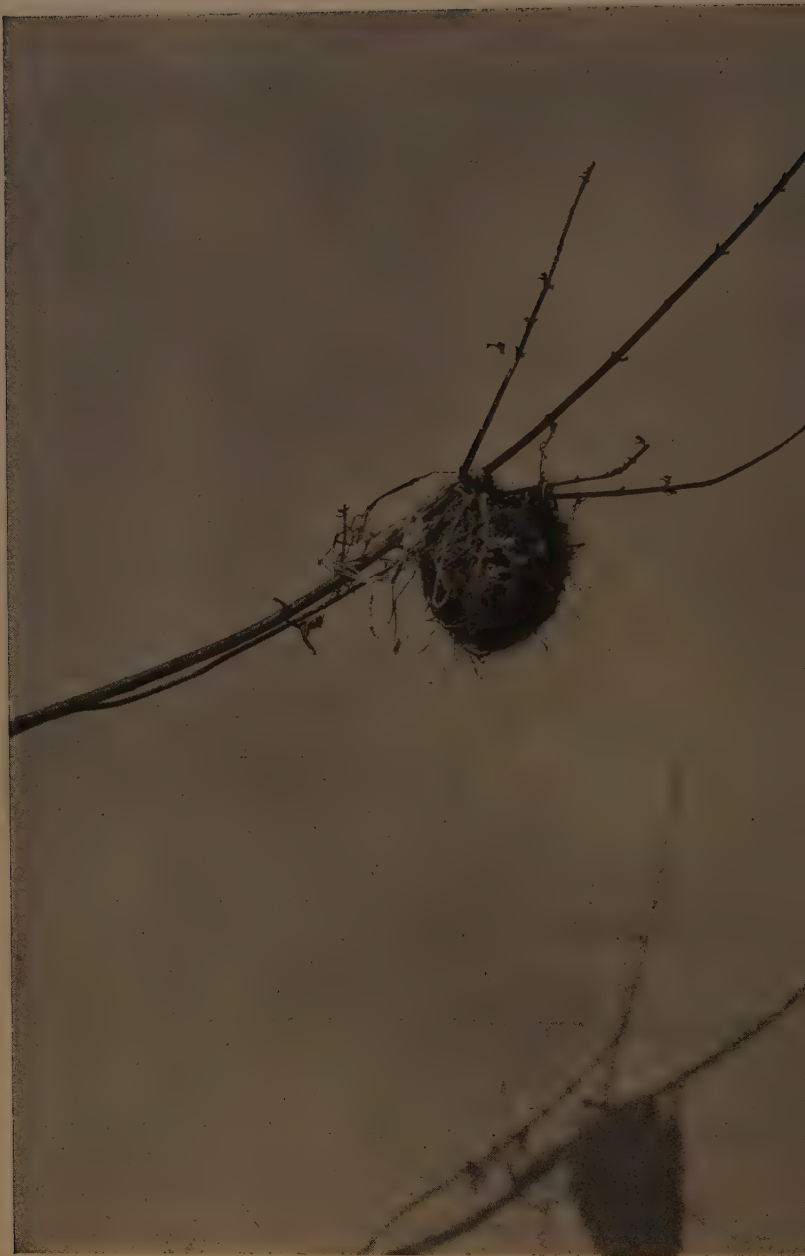
The presence of at least two features has proved an important factor in keeping the birds with us when once they had become accustomed to visiting the place; no cats, or dogs with bird chasing proclivities, are harbored, or permitted on the grounds, and the house, not being located on a public road or thoroughfare, affords comparative quiet. I have no desire to take a fling, except metaphorically, at the cat, but it is concededly the natural enemy of the bird as every one who had ever tried to provide for the care and wants of the songsters knows, and the

birds know it best of all. So serious a menace is the cat considered that the Conservation Commission of New York State has officially classed it as "Vermin" and has appealed to all fish and game clubs as well as to all sportsmen, for help in the war against this animal. Conservation Commissioner Macdonald, in his communication requesting such aid says, "Vagrant cats and cats gone wild are most destructive to bird life and because of their large number and distribution throughout the State are probably the greatest single menace to song and insectivorous birds."

It has been claimed that a fence around a bird ground would insure safety, but cats are good fence climbers and besides this, a suitable fence which would completely surround some places would entail considerable expense. Where bird houses are placed high enough on posts having a smooth surface, they are safe enough, and for those on trees a bit of tin of the shape of an inverted funnel placed on the tree beyond jumping distance will answer the purpose. With an open space surrounding the baths and feed box, the birds are safe on this score. The best way however, to eliminate this menace is to keep the cat away. My neighbor has bathing pools, drinking fountains, bird houses, food stations, and even fruit trees in order to attract the birds, and keeps a



Flicker's Nest in Tree Cavity where a Family of Six was Reared



Nest of Baltimore Oriole on Outer Upper Limb of Maple Tree

house cat during the Fall, Winter and early Spring. His gardener feeds the cat and sprays the trees, though he would show much better judgment if he fed the birds and sprayed the cat, as suggested by a recent news correspondent.

That comparative quiet, if not solitude, makes for a bird's paradise, I am convinced, notwithstanding the fact that they seem to enjoy a trip from the woods and a visit to neighboring houses, and that we know of one case where a Robin built on the outside of a boiler factory. Still if the water, food and shelter were found in the woods, I fear we would not find them so friendly and sociable.

What has become a nuisance and one which threatens to deplete the neighborhood of those birds that build their nests upon or near the ground, is the practice of permitting hounds to roam at will over the country either because their owners want them to get exercise in this manner, or because they are too mean to keep them on their own grounds and give them enough to eat. One or two of these hounds while following the scent of a rabbit will disturb and frighten Brown Thrashers, Bob-white, Towhees, Song Sparrows, Whip-poor-wills and other birds nesting on the ground. It is no defence to the practice to claim that the dog will not hurt the bird. He may not, though the chances are against his inno-

cence, but so far as the birds remaining on the premises is concerned, he might as well kill them as frighten them to death, for if not injured, they leave and take up their homes elsewhere.

Under conditions with which the reader has now become familiar, my observations have been conducted in an atmosphere most delightful and fascinating, and in my intimate acquaintance with the birds I have repeatedly, while sitting alone, or in the company of others, been surrounded by a dozen or more of my singing visitors, some of which would share the chair occupied by me while others would take a corn bread crumb or seed from my hand.

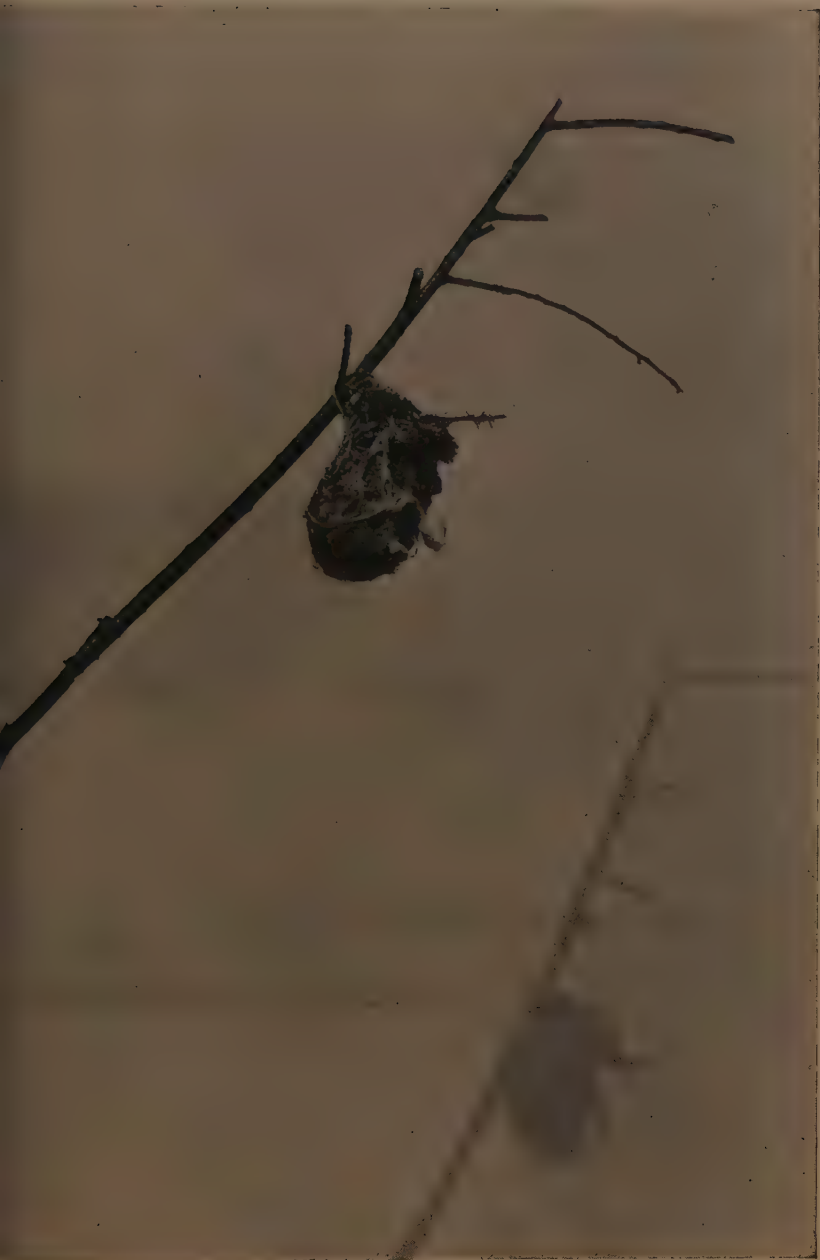
It was my custom to occupy each morning, except when the weather was especially inclement, a chair placed under a big oak tree within fifteen feet of the house, and here it was that my neighbors from the woods joined me. The meetings were held with such regularity that they became a part of the daily program, and I looked upon the gathering as my morning class with the birds as my pupils, though in this case the pupil imparted the instruction instead of the teacher.

It is impossible to convey by means of a word picture the extreme confidence and friendliness displayed by some of these birds, nor can the picture be always photographed, in fact though I have been

able to secure some visible records with the aid of the camera, it has not been possible to reproduce by such means many more instances indicating, even to a greater degree of intimacy than that shown here, the trust reposed by these little songsters. I have in mind the case of a Brown Thrasher and mate that built a nest on the ground under a small cedar tree located about one hundred feet from the house and in plain view of the porch. The female bird had shown a disposition to be friendly at our morning class contrary to the general rule observed by those with which I had a near acquaintance, the male of the species appearing in most cases the more trustful of the two and the more willing to make advances. It was an easy matter to locate the nest, though it could not be seen six feet away, as the mother bird visited the food box and took food to the young by a direct route. There were four youngsters in the family, and Mrs. Laimbeer who visited the nest for purposes of investigation, sat on the ground and fed the mother bird who at that time was standing on the edge of the nest, a piece of moistened bread, which the parent bird took from her hand and at once transferred to the mouths of the young. I tried to get a snapshot of the occurrence even though the sun was not of much help at the time, but the nest was not noticeable a few feet away and when the nest was unoccu-

pied and photographed, it was necessary to tie back the limbs of the tree and tip the nest a trifle to bring it within unobstructed view of the camera.

It is clear in my mind that my first thought in connection with the use of the camera was not suggested by any desire for photographic experience. In many instances the friendly and unusual conduct of the birds had been observed and commented upon many times by friends frequently visiting the house and I wanted to be able to show them some of the interesting things happening in their absence. The camera supplied, to some extent, the means. Even then my main idea was to get close to the birds, for in the first pictures taken the camera was focussed for six feet which made it necessary to be within that distance of the bird as the release was pressed by direct action of the finger. Later a piece of tubing about twelve inches in length was used to obviate the necessity of having the eye on the release when pressed, and to insure steadiness in making the exposure. Later still, when it was necessary to become part of the picture in order to demonstrate the close approach of the bird and to be my own photographer as well, the tubing, in many instances visible at some point, was lengthened, not however, as is evident, because of any difficulty in getting near the object. The camera was focussed on the



Baltimore Oriole's Nest with Windows, Built in Cherry Tree



Nest of White-breasted Nuthatch in Decayed Log, Housing the Parents and I

spot which the bird was expected to occupy with no attempt at bringing the surroundings within proper range, which will account for indistinct background where such appears; but as the sole object was to depict the near approach and confidence of the bird, enough atmosphere has been produced for this purpose. The personal identity of the photographer has been intentionally eliminated in some cases by arrangement of position or by a partial exclusion from the picture itself. The result of this is to destroy whatever artistic effect might otherwise have been produced, but the alternative of repeatedly projecting one's own photograph into the pictures submitted appears even less desirable, particularly as the purpose sought has been accomplished without any such tax upon either the modesty of the author or the patience of the reader. The apparently incomplete appearance of some of these prints is therefore due to design and not to accident or neglect.

The more one uses the camera in the study of birds, the greater the temptation to experiment, and the confidence and curiosity with which some of the songsters approach the instrument during preparations for a snapshot are both encouraging and fascinating. Frequently several of the more inquisitive of an admiring group will light on the camera, while others will stand around on the ground watching

proceedings. With this encouragement many experiments have been made, among others that of inducing birds to take their own pictures, but my efforts in this respect have not produced the most satisfactory results. To a trigger adjustment of the release a piece of small twine, or stout thread, is attached. To this twine or thread, pieces of melon, squash or sun flower seed, or of corn, are fastened, the action of the bird in pecking at the food releasing the shutter. Many such snapshots have been taken but the difficulty has been to get the birds to stand at the required distance from the instrument while doing their part. Their apparent curiosity is so great they will peck at the plain twine or thread quite as often as at the food, and close up to the shutter, the usual result being blurry and of no use, or, at best, an unsatisfactory picture.

CHAPTER IV

April and May arrivals and residents checked up. Mating season.
Constancy of birds. Sex problem guess work. Return of birds
to former nesting homes. Location of box and cavity shelters.
Dimensions of nesting boxes.

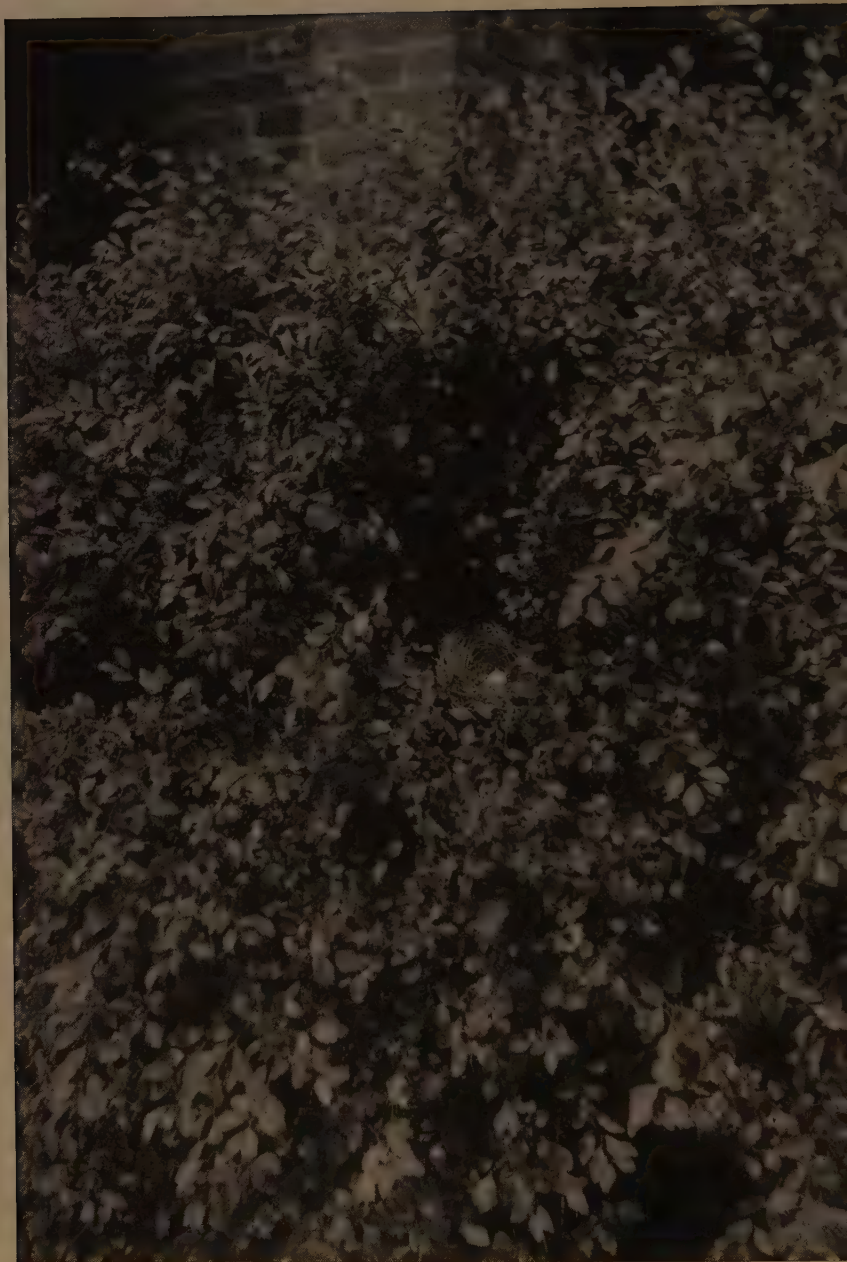
By the middle of May all bird arrivals have reported and upon checking up we find that all those we may expect during the season have put in an appearance. Much has been written of that period of a bird's life described as mating season, or perhaps, seasons is the better word to use as the pre-nuptial event known as mating is at least an annual occurrence. Naturalists have studied it, writers have pictured it, dreamers have idealized it and poets have sung of it. The meeting of the birds, the coy retirement of the female, the pursuit of the male, the appearance of a rival on the scene, or in this instance on the branch, the battle royal between the two competitors for the favor of the maiden, the ignominious defeat and flight of the discomfited rival followed by the exultant notes of the victor, the selection of the successful suitor by the observing and discrimin-

ating female, and the hasty departure of the lovers are all depicted with varying degrees of minuteness, some conscientious writers providing music for the occasion through the obliging presence of neighboring songsters. The befitting changes are also rung on the devotion and constancy following the pledging of these ante-conjugal vows, with the appropriate lessons drawn for the benefit of those of the human race who possess neither of these restrictive, if eminently desirable, virtues.

With the writers of this entertaining romance I have no lance to break, except concerning such matter as is written in a serious vein and in which fiction is presented as fact. When, *e.g.*, it is stated in all seriousness that certain wild birds are faithful to any one companion, I am bound to ask how do you know? In the first place how can you identify your birds? There is only one effective method of identification so far as I know and that is by banding, and how many wild birds would it be possible to identify in this manner? If they are all banded, the chances are you will never see them again and if they do return, they have been thousands of miles away in the meantime, or at least those which migrate have been far off, so of what use is the identification even if possible? Personal observation for this purpose is useless for as a rule one of a species looks much



Entrance to Nest of Belted Kingfisher on Side of Bluff



Nest of Chipping Sparrow, in Deutsia Bush Close to the House

like another and even in the impossible event of the conduct, in this respect, of any two wild birds being definitely ascertained, how is their action a guide as to others of the same species?

In the matter of choosing mates some writers have presented the color theory as having much to do with the selection, the bird of brighter plumage making the choice; for example, if the male is the brighter colored of the two, he proposes to the female; on the other hand, if the colors of the female are of more brilliant hue than are those of the male, she does the asking. The correctness of this interesting theory has been questioned, but if it possesses any merit, the female gets little advantage or opportunity through its application for her plumage is very rarely as brilliant as that of the male who seems to have appropriated, if not to an extent, monopolized, the bright and conspicuous colors.

Other theories or hypotheses are advanced, some of them rather fascinating, though not convincing. It seems a fair statement that any assumption of fact based upon a knowledge of the bird mind, its motives, its intentions, and the code concerning what is conventional in polite avian society would necessarily be purely speculative and wholly imaginative. We know from personal observation that with some species two birds of opposite sex assist each

other in making a nest if not in selecting its location, and that the female lays eggs which are subsequently hatched. The rest of the sex problem so far as the birds are concerned is pretty much if not wholly guess work.

The season for mating and nesting of most small birds on Long Island is, approximately, from May fifteenth until June twentieth. This will vary slightly as occasionally a family whose arrival has been delayed for some reason or other will appear after the domestic arrangements of the others have been completed, perhaps due to their parents having begun their nest building later than its neighbors. Some of our birds raise two broods. The Chipping Sparrow, Catbird, Robin, Song Sparrow, Bob-white, Phoebe, Swallow, Bluebird, House Wren and Towhee may be counted upon to breed twice, while among those which sometimes raise a second breed are the Chickadee, Black and White Creeper, Scarlet Tanager, Brown Thrasher and Blue Jay. This list contains the names of all our Long Island birds to be mentioned in this connection that have come directly under my notice, though doubtless there are others breeding more than once.

The question of how long a bird continues mated to the one choice belongs with the other unanswerable queries so far as I know. Probably the correct

answer to this is that they mate for the breeding season, a conclusion however, which again is a matter of conjecture. That they return to their breeding place I have no doubt. The most friendly of all the birds on our visiting list was a Towhee, and while there is no way of determining it by conclusive proof, I am satisfied that he returned to us in the Spring of each year, for in the second year, on the day of our arrival in April, in answer to the call of Mrs. Laimbeer who stood in the roadway a few feet away from the house, he emerged from the woods about ten feet away and flew up on her outstretched hand where he found a few corn bread crumbs for which he had the year before shown a great fondness. He at once fell into his habits of the preceding year, calling at the dining room window in the morning, entering the open door, and eating his breakfast of corn bread on the back of a chair inside the room within a few feet of the doorway. In other ways he appeared to feel that he was at home and he certainly acted it, resuming his friendly greetings and visits just as though he had been with us all Winter instead of having been away for six months. He returned to us three summers, spending in all four summers at our house. There is not the slightest doubt in my own mind, or in the minds of others who saw him year after year, that the Towhee appearing each season was one and the same

bird, yet the fact is not susceptible of proof by any rules of evidence technically considered competent, material or relevant. His visits on the porch and in the dining room have frequently been made at a time when week-end guests were present who insisted they knew the bird from former years.

Regarding his constancy I will say that the identity of the Mrs. Towhee reappearing with him is not convincing. The original choice of our friend was of a rather retiring disposition, and while she ate, drank, bathed and spent much of her time with us, she was a bit shy and never gave us the same opportunities for studying her carefully as did her mate. I am inclined to the opinion that in the four years mentioned Mr. Towhee was true to several, though his appearance with a new consort occasionally was not in itself evidence of either fickleness or inconstancy for he might have been a widower each year due to the deaths of his successive selections.

There were two Bob-white which in some way had escaped the hounds and the hunters during the Winter and which visited us with a degree of confidence suggestive of previous acquaintance, but the identification was not altogether convincing, while on the other hand we were certain that a Brown Thrasher which we called "Stumpy" because of his abbreviated tail feathers was our friend of the year



Chipping Sparrow in Search of her Favorite Food. A Daily Incident



Chipping Sparrow Enjoying the Fragrance of a Good Cigar

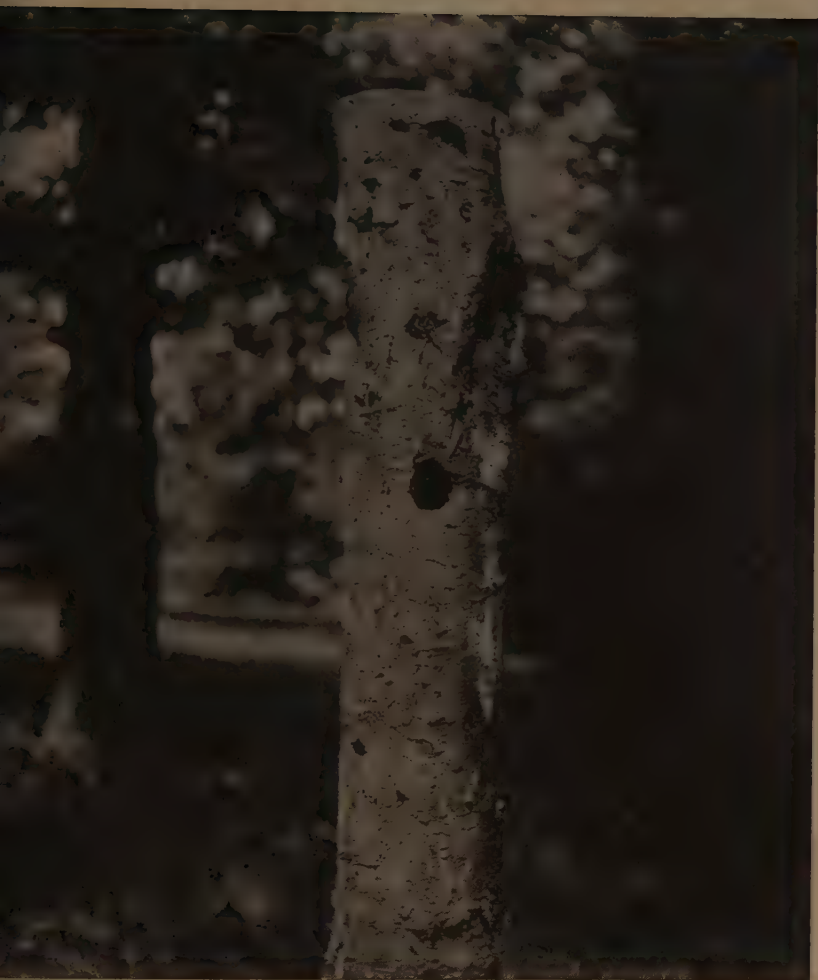
before, both because of his sawed off tail and for the reason that he immediately took possession of his favorite resting place on the top of the hammock swung on the front porch; another case of proof of an insufficient character, but we could not help believing we were receiving a former acquaintance.

Mating and nesting season has been approximately timed for that part of the year when the natural food supply is sufficient to enable the parents to feed the young. As a rule, small land birds nest alone, the only exception that I know of being the Martin who appears to prefer company of his own kind and for the especial accommodation of which houses have been built containing a half dozen or more apartments which seem to be taken where one family houses are not occupied.

Two classes of birds summer with us, one comprising those which avail themselves of tree cavities or the shelter boxes provided by us for their comfort, and the other, those selecting their own location on the ground, or in tree, thicket, or bush, building their own nests wherever they like, to suit themselves. The latter class is rather to be desired from the viewpoint of an observer, for an exposed nest when located will furnish much information not obtainable through any other source, while of an

occupied house or box nothing is to be seen of the tenants from the time the nesting material is moved in until the young make their first visit out of doors, except the periodical trips of the parents to and from the house. On the other hand it is a great satisfaction in stormy weather to know that your little charges have a roof over their heads and a corresponding cause for regret that some of the others have practically no overhead shelter, although it is by no means certain that each in his own mind is not equally satisfied, or is not perhaps sympathizing with the other.

Of the dozen or more bird boxes, logs or shelters located at our place, two were last year occupied by Bluebirds, four by House Wrens, two by Woodpeckers, one by Tree Swallows, one by Flickers, and one by Nuthatches. The other birds may have looked them over but they all built their own nests, some of them being within a few feet of the house. In suspending boxes from limbs of trees, sufficient swing should be allowed to get beyond the danger line of cats and squirrels. Boxes for Wrens or Bluebirds may be placed on posts, nailed or swung on trees, nailed to the side of the house, or in fact located almost anywhere high enough to provide against cats, the small entrance hole affording protection from intrusion by squirrels and other in-



of Red-headed Woodpeckers in Tree Cavity. Four Young were Reared Here



Nest of Catbird in Forsythia Bush within Six Feet of the House

truders and the birds are apparently suited with almost any location.

Where the boxes have been left until early Spring before being removed it often has been found that squirrels and mice have occupied them through the Winter, gnawing the entrance in the Bluebird boxes until the hole was large enough to enable the squirrels to enter, so a piece of tin through which a hole had been cut of the size desired, is nailed over the entrance and has proven effective so far as the squirrel is concerned. Ground mice frequently take possession of boxes in the Fall, even the Wren houses affording them a home and the best practice would require the removal of all shelters intended for summer birds, in the Fall. All boxes should be thoroughly cleaned before again being placed in commission as most birds seem to prefer selecting their own nesting material, although a family of Bluebirds, as if to prove the rule, moved in where the removal and cleaning of a box had been overlooked, when several places, well renovated, of like design and equally well located, were available.

The Department of Agriculture furnishes a table governing the dimensions and installation of shelter boxes, which is generally accepted as the best guide for builders. Those designed for Robins, Barn Swallows and Phoebes have one or more sides open,

while that designed for the Song Sparrow has all sides open. This semi-shelter, called a "rest" by some of those who sell devices for attracting birds, seems a desirable help, and I have tried several of them, yet have never seen one occupied, except in the Winter. I have tried to coax a Robin and a Song Sparrow to use them, but the Robin passes it by and builds in a cedar tree where she is bound to get soaked during every heavy rain, and the Song Sparrow ignores it for a miserable looking heap of rubbish lying at the foot of a tree. For those wishing to construct nesting boxes, the following guide above referred to will be of much use and may safely be followed.

Dimensions of Nesting-boxes, as given in Farmers' Bulletin:

SPECIES	Floor of Cavity	Depth of Cavity	Entrance Above Floor	Diameter of Entrance	Height Above Ground
	<i>inches.</i>	<i>inches.</i>	<i>inches.</i>	<i>inches.</i>	<i>feet.</i>
Bluebird.....	5 x 5	8	6	1½	5 to 10
Robin.....	6 x 8	8	#1	#1	6 to 15
Chickadee.....	4 x 4	8 to 10	8	1½	6 to 15
Tufted Titmouse.....	4 x 4	8 to 10	8	1½	6 to 15
White-breasted Nut- hatch.....	4 x 4	8 to 10	8	1½	12 to 20
House Wren.....	4 x 4	6 to 8	1 to 6	¾	6 to 10
Bewick Wren.....	4 x 4	6 to 8	1 to 6	1	6 to 10
Dipper.....	6 x 6	6	1	3	1 to 3
Violet-green Swallow...	5 x 5	6	1 to 6	1½	10 to 15
Tree Swallow.....	5 x 5	6	1 to 6	1½	10 to 15
Martin.....	6 x 6	6	1	2½	15 to 20
Song Sparrow.....	6 x 6	6	#2	#2	1 to 3
House Finch.....	6 x 6	6	4	2	8 to 12
Phoebe.....	6 x 6	6	#1	#1	8 to 12
Crested Flycatcher...	6 x 6	8 to 10	8	2	8 to 20
Flicker.....	7 x 7	16 to 18	16	2½	6 to 20
Red-headed Wood- pecker.....	6 x 6	12 to 15	12	2	12 to 20
Golden-fronted Wood- pecker.....	6 x 6	12 to 15	12	2	12 to 20
Hairy Woodpecker.....	6 x 6	12 to 15	12	1½	12 to 20
Downy Woodpecker...	4 x 4	8 to 10	8	1½	6 to 20
Screech Owl.....	8 x 8	12 to 15	12	3	10 to 30
Sparrow Hawk.....	8 x 8	12 to 15	12	3	10 to 30
Saw-whet Owl.....	6 x 6	10 to 12	10	2½	12 to 20
Barn Owl.....	10 x 18	15 to 18	4	6	12 to 18
Wood Duck.....	10 x 18	10 to 15	3	6	4 to 20
Carolina Wren.....	4 x 4	6 to 8	1 to 6	1½	6 to 10
Barn Swallow.....	6 x 6	6	#1	#1	8 to 12

NOTE:

#1, one or more sides open.

#2, all sides open.

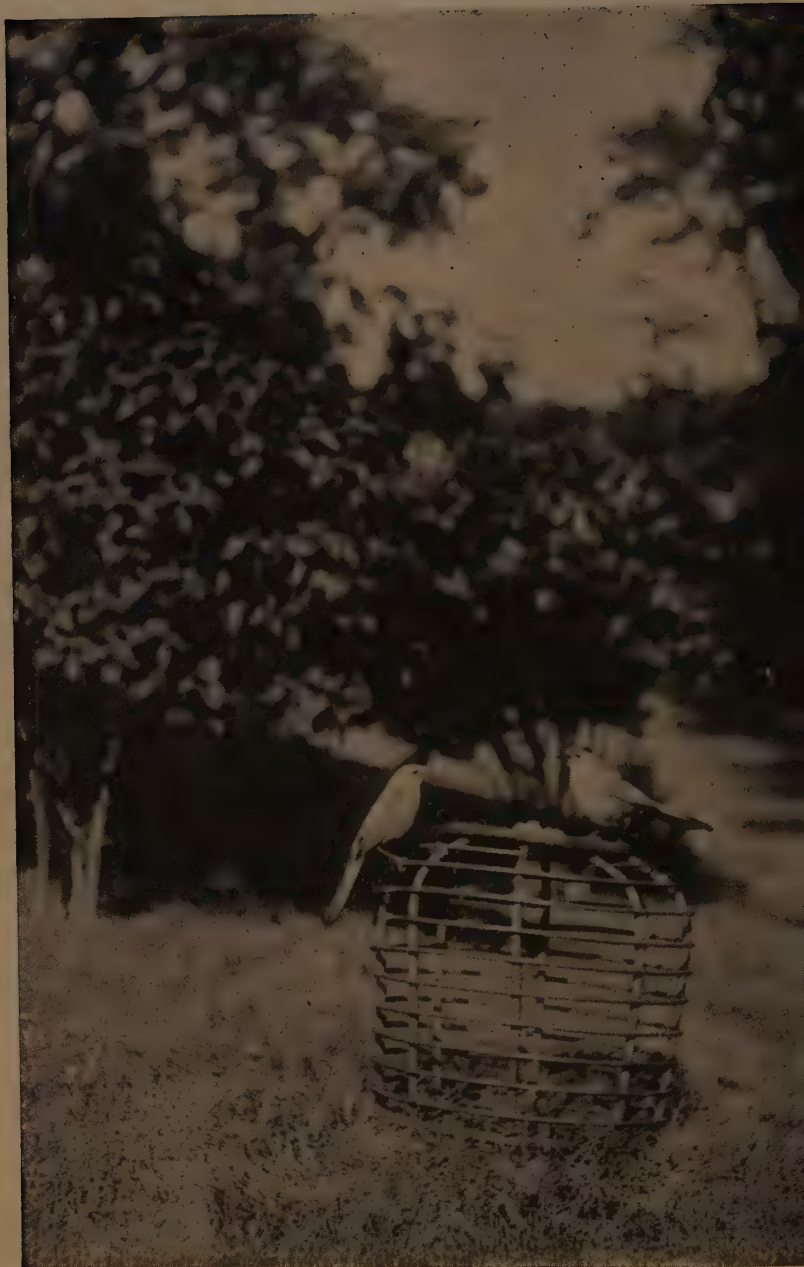
CHAPTER V

Gathering of nest materials. Time required in building. Number of eggs laid. Period of incubation. Length of time young remain in nest. Appearance when hatched. Approximate accuracy of nesting information. Moulting season and change of plumage.

ONE of the pleasures of the observer consists in watching the birds select the material with which they build their nests and noting the persistence and ingenuity of some of them in getting what they want. An Oriole, for example, spent fully five minutes tugging at a strand of horse hair before he succeeded in disengaging it from the material with which it had been twisted, and a Robin, selecting a spot under one of the baths where the overflowing water kept the ground damp, carried from there a combination of stubble and mud which, when it dried in the nest, made an excellent holding substance for the dry grass, strips of paper, seaweed and small twigs which she used in construction. Twigs, bark, fibre, roots, feathers, dry grass, leaves, hair, paper, cotton-down, waste, old string and mud are used as building



Catbird Pays a Visit to the Front Porch



Catbirds Keeping a Dinner Appointment

material and except for the larger birds who depend more on the use of small branches and twigs with a bit of bark or dry leaves or roots for a center, it would seem that nearly everything which can possibly be used, is utilized.

The time required by the small birds within which to complete the building of a nest is from one to two weeks. Some birds appear to work faster than others and then too, perhaps the female, or even the male is a bit fussy about the style of structure or the quality of the work done, however if the male assists in the work as he sometimes does, the nest is completed generally in about a week and the female takes possession at once, remaining on the nest after the full complement of eggs has been laid, except when she finds it necessary at intervals to forage for food.

The number of eggs laid daily is one, and as a rule the clutch or number of eggs in the nest when the bird has ceased laying is four, though it varies greatly with different species. Sometimes only three and at times, five are laid, but most of the nests of the smaller birds watched by me and those discovered after laying had ceased, contained four eggs. Two exceptions were noted, that of a Blue Jay which contained five eggs, and that of a Bob-white which bird very likely had in mind the probability of being

shot before the next nesting season came around as she made a generous contribution of sixteen eggs. Another nest found contained only nine which is less than the usual number. Regarding the size of the egg laid, this is apparently governed by the size of the bird, the larger birds laying eggs of a larger size. While this rule is general, the eggs producing young that are hatched naked are not as large in proportion to the size of the bird as those bringing forth young covered with down, in other words, with birds of the same size, the eggs of altricial birds are smaller than are those of the præcocial group.

The period of incubation for the smaller birds is from ten to twelve days varying slightly with the size of the eggs, and is of longer duration in the case of the larger birds, the Ostrich, *e.g.*, requiring from forty to forty-five days for this purpose. I have never observed the male spending much of his time on the nest, though the authorities inform us that in some groups he helps out very materially in this direction.

The young of most of the smaller birds except those of the præcocial group remain in the nest about eight or ten days after being hatched and then join the outer world, though the parents feed them for a time until they are able to find their food without any help. It is a frequent sight to see fat healthy looking

Blue Jays, Brown Thrashers and Robins being fed by a Mother bird thinner and smaller in appearance than the young, the parents being apparently very much more in need of assistance than the lazy and greedy acting newcomers.

With the exception of the Bob-white and Grouse which are supplied with a coat of soft feathers when they break through the egg, the small birds common to us appear with no feathers at all. They are absolutely free from covering of any sort except the bare skin, their only protection from overhead storm and from the cold being the body of the parent bird. The feathers soon grow however, and they are respectably clad when they leave the nest at the expiration of eight or ten days. Young have jumped or tumbled out of the nest when we were trying to adjust the camera for the purpose of taking their pictures while on the nest, but beyond being frightened they could not have suffered as the nest was not far from the ground, and the birds soon joined their mother nearby, seemingly no worse for their unexpected, if forced outing.

Reference has been made to a diary of events kept for the purpose of noting matters of interest and of comparing or verifying facts and data regarding birds under observation. As an illustration of the value of some such record in checking up figures quoted, for

example, those given in connection with the subject of building, laying, incubation and nest occupancy, two or three entries taken from such record will suffice. The entries follow:

Blue Jay, Spruce tree 25 feet from house, 10 feet from ground,

Nest under observation	.	.	May 6
Five eggs in nest	.	.	May 13
Birds hatched	.	.	May 25
Birds leave nest	.	.	June 3

Period of incubation 12 days,

Birds in nest 9 days.

Song Sparrow, in cavity of stump of tree on ground level,

Nest under observation	.	.	May 8
Four eggs in nest	.	.	May 14
Birds hatched	.	.	May 24
Birds leave nest	.	.	June 1

Period of incubation 10 days,

Birds in nest 8 days.

Robin, Cedar tree 4 feet from pantry window, 6 feet from ground,

Nest under observation	.	.	May 4
First egg laid	.	.	May 11
Second egg laid	.	.	May 12
Third egg laid	.	.	May 13
Fourth egg laid	.	.	May 14
Four eggs in nest	.	.	May 14
Two birds hatched	.	.	May 25
One bird hatched	.	.	May 26
One bird hatched	.	.	May 27
Birds Leave Nest	.	.	June 8

Period of incubation from date fourth egg was laid:

For 2 eggs	11 days
For 1 egg	12 days
For 1 egg	13 days

Birds in nest 11 days.

(In figuring time parts of a day are disregarded. In calculating the period of incubation it is assumed that the birds do not begin to incubate until the last egg is laid.)

The authorities practically agree upon ten to twelve days as the period of incubation and from eight to ten days as the time the birds remain in the nest. In the case quoted of the Blue Jay, the period of incubation was twelve days; in that of the Sparrow ten days; and in that of the Robin, (average) twelve days. The time the birds remained in the nest was in the case of the Blue Jay nine days, in that of the Sparrow eight days and in that of the Robin eleven days. In all three cases named the accuracy of the figures cited by the authorities is practically confirmed. The Robin record was easily made with more regard to details as the position of the nest in a sparsely limbed cedar tree near the window and a foot below the window level in height, made it plainly visible at any time during the day.

With the young off the nest and their preliminary education on food getting under way, a perceptible calm succeeds the weeks of busy quick flying birds

with their attractive calls and bits of song, and the open is practically deserted. A few of the young are seen now and again picking about the ground and occasionally a mother bird looks around to see if the food box is still doing duty, but the birds have followed their labors of building, laying, hatching and feeding by disappearing in the woods for a well earned rest where they remain until the moulting season is over. Even the student, whose duties of observation have been strenuous for weeks, feels let down by the change and welcomes the opportunity of enjoying the quiet which the absence of the birds for a time makes possible.

Birds moult at the close of the nesting season, and just what changes in plumage take place at that time is not always easily determined. With birds of brilliant color the change of plumage is, of course, noticeable, but there are so many different species of birds where the male and female are colored alike that it is, at times, difficult to discover just what changes if any, have occurred, or to state with authority to just what process the bird is subjected at that time.

To those birds that nest upon the ground or near the ground, such as the Towhee, Song Sparrow, Bob-white, Brown Thrasher, Whip-poor-will and others, nature has provided a coloring very like the trees,

bark, dry leaves and grasses of which they build, making it comparatively safe for them to nest without disclosing their presence to a possible enemy, and because of their color any change resulting from moulting would be difficult to detect. The Towhee, though included among those nesting on the ground, is an exception however, so far as the color scheme is concerned, for both male and female are beautifully though modestly colored.

There seems to be something in the buds, blossoms and foliage of the trees which screens or protects to a wonderful degree those birds of brilliant plumage which live in or frequent the woods, for the Cardinal, Grosbeak, Flicker, Blue Jay, Scarlet Tanager, Kingfisher and Red-headed Woodpecker seldom appear as conspicuously noticeable when seen among their home surroundings as one would naturally expect, notwithstanding their bright and startling colors. Changes in the plumage of any of these highly colored birds indicative of a post moulting garb, should be readily observed, particularly when it is conceded that all birds moult, and contended by some that in such moulting their entire plumage is renewed, but there seems much to be explained as to just what does occur even with all the authorities accessible.

The Goldfinch, Bobolink, and Scarlet Tanager are conspicuous examples of those changing their raiment,

though the change made by the Goldfinch appears to be made in the Fall of the year when he gives up his pretty coat of rich yellow with black crown and tail for the black and dark brown of the female. The Bobolink and Tanager however, both change during the moult, the Tanager shedding his scarlet coat for the green of his mate, while the Bobolink parts with his black and white covering and takes on the brown of the female. Whether, where the moult is followed by a change of color, the bird sheds the old feathers and gets new ones of a different color, or whether the old feathers in these cases remain and their colors change, is not at all clear, nor do the opinions of those who have studied the subject appear to be convincing.



Catbird Getting the Morning News with his Breakfast



Nest of Blue Jay in Spruce Tree

CHAPTER VI

Migration. What birds migrate. Day and night travelers. Some remarkable flights. Routes selected. How direction is determined at night. Dangers of travel. Lighthouse Keepers report. Why birds migrate.

WE have now lived some months with the birds. We were on hand in April to meet those that had not journeyed very far in the Autumn and had wintered in the neighborhood, and to welcome on their arrival the travelers that had spent the preceding Winter in Southern climes, glad to see them all and recognizing in some cases, as we thought, acquaintances of the year before. We have observed their busy nesting activities, watched them build their homes, noted the solicitude of the parents when the little ones came, and seen the young leave the nest, forage around a bit and then seek the cool of the woods with their parents until the moulting season had passed, much of the time enjoying the beautiful music with which we were lavishly entertained. Then came the shorter days and the lengthening nights and long before the crisp was in the air and before the beautifully colored foliage of early Fall tinted tree and bush, the exodus had begun and we had with us only the regulars that

spend their Summers and Winters in practically the same locality.

Interesting as are all the phases of bird study, that of migration is perhaps the most wonderful and fascinating. Birds that have mated, built houses, nested and raised families in one place disappear from sight after a brief season to appear within a short time hundreds and thousands of miles distant and these mysterious journeyings are of yearly occurrence, just as much a part of their existence as mating, nesting or moulting.

Any dissertation by me on bird migration based upon personal knowledge of the subject would be very brief and in substance would recite the fact that the birds came and went away again, which statement of fact, if not rich in detail, would be at least, as authentic and as prolific of information as much that has been written on the matter. I propose therefore to anticipate any charge of temerity which might possibly follow a statement of my own on this subject, and without attempting to quote literally will appropriate my main facts from an article written by the late Wells W. Cooke of the Bureau of Biological Survey, Department of Agriculture, in an exceedingly interesting and instructive Bulletin on Bird Migration. For any conclusions or opinions of my own, full responsibility is confidently assumed

on the theory that one guess is quite as likely to be right as another.

Not all birds migrate. Some of those more generally known, such as the Meadowlark, Screech Owl, Crow, some of the Woodpeckers, Song Sparrow, Nuthatch, Blue Jay, Chickadee, Cardinal, Bob-white and Goldfinch remain with us the year around. Others, including the Towhee, Whip-poor-will, Black and White Warbler, Yellow Warbler, House Wren, Catbird, Brown Thrasher, Martin, Wood Thrush, Vireo, Baltimore Oriole, Orchard Oriole, Scarlet Tanager, Bobolink, Phoebe, Woodcock, Mourning Dove, Brown Creeper, Kingfisher, Robin and Hummingbird get weary as the summer is well advanced and begin to leave, though the Robin sometimes remains or goes only a short distance. In some species all do not migrate. Some prefer to remain where they nest, or in the vicinity, but the vast majority in this latitude move southward.

Migration southward begins during July, in some cases as early as the first of the month, in fact it would seem that most birds get ready to go South as soon as their young are ready and able to make the trip, for the first brood is leaving the nest up to June 14, sometimes later. Then follows the moulting season before they can start, those breeding twice, as many do, having scant time for a July get-

away, though some appear to make it. Those nesting beyond the Arctic Circle however, have an exceedingly short summer, too short to permit them to postpone their travels until after moulting, so as soon as the young are strong enough to make the journey, they are off, doing their moulting on the way.

Some birds migrate by day and some by night. Day travelers include Swallows, Hawks, Night-hawks, Chimney Swifts, Towhees and sometimes ducks and geese, who vary their hours of travel and make the journey by night as well. Those taking the "Night Line" include most of the Sparrows, Warblers, Thrushes, Flycatchers, Orioles, Vireos, Tanagers and Shore birds. Day travelers move slowly, the smaller birds seldom making over twenty miles an hour, while night tourists, averaging perhaps thirty to forty miles per hour, rarely exceed fifty miles for that period. Neither group travels at its highest rate of speed. The Purple Martin has been known to make one thousand four hundred and forty miles in twelve days, averaging one hundred and twenty miles for each night and most of the others make from five hundred to seven hundred miles without stopping. The Hummingbird, smallest of all birds, flies over five hundred miles in a single night in crossing the Gulf of Mexico. The Scarlet Tanager leaves Canada and arrives in Peru; the Bobolink,



Blue Jay Waiting for her Young to Join her



Young Blue Jay Looking the Ground Over

Barn Swallow, Purple Martin and some of the Thrushes that have their nesting places in New England, spend their winters in all probability in Brazil; the Black Poll Warblers nesting in Alaska, fancy South America where they remain during the winter after a journey of some five thousand miles.

The Nighthawk holds the long distance route record for land birds with seven thousand miles to his credit, his route being north to Yukon and south to Argentina. Shore birds, breeding north of the Arctic Circle, visit South America in winter, some making Patagonia, distant by migration route eight thousand miles. The Arctic Tern, winner of the World's migration championship, has a record of his own. Nesting so near the North Pole that the snow forms the walls surrounding his nest, he leaves the Polar regions, taking his family with him as soon as they are strong enough to make the trip, and is found after a lapse of several months on the Antarctic Continent, having traveled some eleven thousand miles. Some of the more discriminating of the colony have been seen as far South on the Atlantic Coast as Long Island and for those not breaking the journey the stay must necessarily be short as it is estimated they are due to arrive at their North pole home on the return trip within twenty weeks of their departure from that spot, in the meantime having to travel

twenty-two thousand miles, a flight of not less than one hundred and fifty miles a day for the entire distance. Many thousands of Arctic Terns breed in the Audubon Society Reservation on the coast of Maine however.

The shortest route is not always selected. New England birds wintering in South America could make the direct trip over the Atlantic, a flight of two thousand miles, but they follow the coast to Florida and then by island or mainland, to South America. Most birds follow the main air highway, though this frequently takes them a zig-zag or round about way when they could apparently more easily and comfortably take a much shorter route. Maps upon which migration routes are charted covering many of the official journeys of the birds are issued by the Bureau of Biological Survey and will be found most interesting. Over one of these Fall routes the Golden Plover is credited with a single flight of twenty-four hundred miles, from Nova Scotia to South America, the longest known flight of any bird.

By what means birds select their course at night is puzzling. It is not altogether sight, as might be the case with day travelers, else how could they keep to their course on dark nights or in thick foggy weather, when the owl by reason of his peculiar gift of night vision, might be supposed to see where he is going? Something which for want of a better name

may be called instinct, probably aids, if not governs them in the amazing and almost incredible flights which it is known they make, but further than this we are as much in the dark as were those who we are told noted the yearly coming and going of the birds centuries ago.

Bird migration is accomplished at the sacrifice of many lives. However keen the instinct or whatever agency guides the bird in his flight, many lives are lost by coming in contact with objects they fail to see or to which they are irresistibly drawn. Telegraph and telephone wires kill a great many. Many are caught in severe storms while on large bodies of water and are compelled to seek rest on the water, the smaller birds, unable to combat the high waves, being drowned. High objects exact a heavy toll. In one morning the bodies of one hundred and fifty birds were counted on the ground surrounding the Washington Monument at Washington, D. C., and though this number is of course, exceptionally large, the death rate from contact with high objects is constant. Bright lights too seem to confuse at times. Locomotive lights kill many and when the Statue of Liberty in New York Harbor was lighted, as many as seven hundred birds in one month have been killed by striking against the lamp and structure. Coast lighthouses have always been responsible for

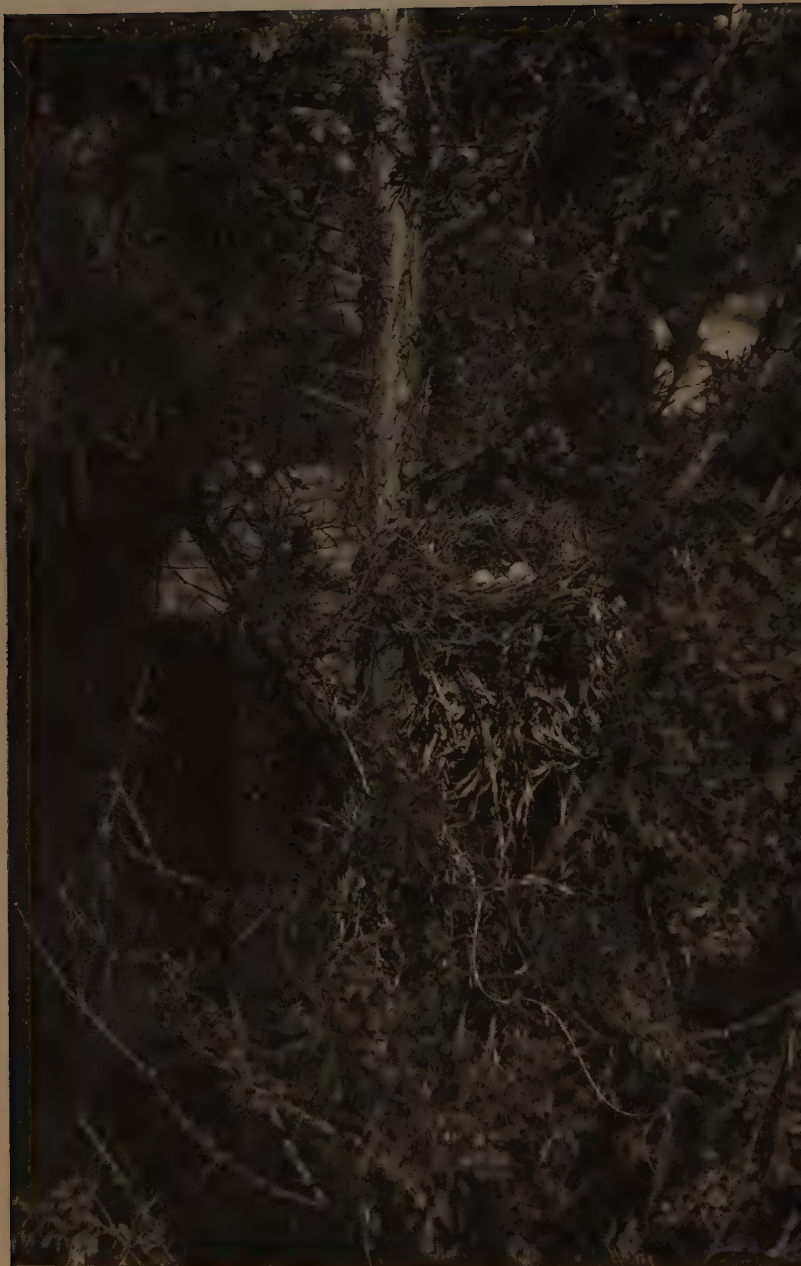
an enormous loss of life, the steady white light attracting the migrating birds who seem to lose their heads and fly against the thick glass, with fatal results.

In a very interesting conversation with Captain Ezra S. Mott of Port Jefferson, Long Island, for many years keeper of the lighthouse at Fire Island, New York, he states that in Spring when the birds were on their way here from the South and when leaving here in the Autumn on their return trip, the number injured and killed from this cause was almost incredible. It was part of his duty to daily make an examination of the outside of the lighthouse and structure for the purpose of noting and recording the number of birds killed by flying against or being blown against the light, and in case the list included a bird not known, the head and wings of that bird were sent by him to Washington with a memorandum of the date found. For example such a specimen was found by him one morning and forwarded in accordance with instructions. An acknowledgment was received from the Acting Chief of the Bureau of Biological Survey in which it was stated the bird was of a rare species found in the Arctic regions and North Atlantic, migrating southward along our coast as far as Maryland and occasionally driven inland by storms.

An abstract of a Report made by Captain Mott and submitted by him is especially interesting as



Blue Jay Announcing his Arrival



Nest of Robin in Cedar Tree, within Four Feet of Pantry Window

indicating not only the great loss of life incident to bird travel from this one cause alone, but the minute detail with which the Government through its Bureaus pursues its investigations and study of Bird Migration. The Report shows that in the latter part of the month of August on one night named, the following number of birds struck Fire Island Light:

Bobolink	12
Chat	1
Kingbird	1
Worm-eating Warbler	5
Wilson's Thrush	8
Black Warbler	5
Hooded Warbler	1
Yellow Warbler	2
Black and Yellow Warbler	3
Prairie Warbler	1
Black Poll Warbler	2
Olive-sided Flycatcher'	2
Sora Rail	1
Redstart	23
Chestnut-sided Warbler	4
Canada Warbler	13
Water Thrush	16
Least Flycatcher	4
Yellow-bellied Flycatcher	1
Red-eyed Vireo	20
Oven-bird	20
Black and White Creeper	32
Maryland Yellow Throat	<u>114</u>

Making a total of 291 birds,
the toll for one night.

The detail observed in the collection of this and other information concerning the presence of birds in the vicinity is well illustrated by a specimen form of report or chart in which the following record was kept:

Number of Station . . . (Lighthouse) 382
 Name of Station . . . Fire Island Light
 Name and Post-office address of keeper,
 Ezra S. Mott, Bay Shore, N. Y.

Regarding the presence of birds:

Name of bird
 When first seen
 About how many seen
 When next seen
 When it became common
 When last seen
 Note where common or rare
 Does it breed near the Light

Regarding birds striking the Light:

Name of bird
 Date of striking
 Hour of striking
 Number striking Lantern or Tower
 Number struck
 Number killed
 Direction and force of wind
 Weather conditions: clear, fog, rain or snow
 Remarks (to be added by keeper if necessary or desirable).

Migrating northward birds come from the south-east when approaching this Station, their course



Robin Sounds a Breakfast Call



A Robin's Salutation: "Good Morning Judge!"

after that being influenced by the winds. Oven-birds, Blackbirds, Swallows, Sandpipers, Robins, Thrushes, Warblers, many sorts of Ducks, including Whistlers, Red Heads, Coots, Brant, Old Squaw, and Broadbills, as well as Blue Herons and Sea Gulls are familiar visitors at the Light, only one Sea Gull being recorded however, as having struck the Light during twenty years' time. Birds on their long journeys frequently meet at some point and then make the trip in company, sometimes remaining in one place during the round-up for a week, it being estimated that as many as five thousand swallows have been seen at one time during the first week of September on the wires near the Light.

Why our birds migrate is a problem not yet solved. Many are the theories advanced in answer to the query, some ingenious, some clever, some nearly plausible, but none quite satisfactory or convincing. Love of home is suggested as the governing motive, but if this theory is tenable why do they not stay at home, or at least remain there long enough to get acquainted, instead of leaving as soon after nesting and moulting as the strength of the young will permit? Does force of example, and the regularity of habit on the part of other birds furnish a contagion as a result of which all feel they must join in the yearly pilgrimage or be deserted by their

kind? Are climatic conditions a factor in determining their flight, or is the food supply or the absence of it, responsible for their movements? Perhaps the knowledge of location of feeding grounds and the desire to be where the supply of food is abundant is as plausible a solution of the question as any advanced, for the instinct of self-preservation is ever present and birds must eat.

An old established theory assumes the presence of birds in North America and in Canada centuries ago, when there was plenty to eat for all at home, and when no necessity existed for seeking food elsewhere. At a much later day the southern advance of the Arctic ice fields produced a condition in which the food supply was inadequate and the birds were forced to go elsewhere for subsistence thus inaugurating an exodus which may have developed into a well formed habit. At all events, our Government Bureau, dignifying the theory so advanced, calls our attention to it, referring to it as "the more commonly accepted theory," and in Mr. Cooke's article the answer to the question "Why Birds Migrate," based upon the theory stated, would appear to be this, that "The formation of the habit of migration took place at the same time that changing seasons in the year replaced the continuous semi-tropical conditions of the preglacial eras."

CHAPTER VII

Summer birds have departed. Abandoned nests are photographed and examined for data regarding construction and materials used. Ready for Winter campaign. Help necessary in providing shelter, water and food.

Now that the Summer birds, as we call them, have gone, we have an opportunity of examining their nests more critically without disturbing the former occupants, and before preparing for the Fall and Winter colony. To reproduce the nest by photographic process just as it is when occupied, and get a correct idea of its appearance, formation and surroundings, is, in most cases, impossible, for if it were not that the flight of the bird had indicated its location, it would never have been seen. Of our commoner birds the Chipping Sparrow, Blue Jay, Catbird, Bluebird, Wood Thrush and the Robin when she nests in bushes, build where it is necessary to tie back or cut away branches and foliage in order to get a clear view and sufficient light; while Brown Thrashers, Oven-birds, Song Sparrows and Towhees building practically on the ground, are so obscured

by grass, stubble and leaves that it is seldom possible to obtain from any angle the light or view necessary for camera purposes. I have therefore in some cases, in addition to snapping the nests where built if possible, removed the nests from their positions after nesting season and where the birds were through with them cutting away branches with the nest where necessary in order to keep it intact, in this way preserving as much "atmosphere" as possible and consistent with a fairly accurate picture. Perhaps if the woods belonged to someone else the pruning process might be objected to.

A professional artist may of course make his own background as many of them do, with very pretty effect, but I am rather of the opinion that the picture showing barely the nest itself, perhaps in both a normal and in a slightly tipped position, conveys when viewed in connection with a written or printed description, the most satisfactory impression. Many photographs of nests have been taken where because of the color of the building material used and the color of the background, the print shows, except to the photographer, nothing more tangible than a mixup of branches, twigs, stumps and leaves, no well defined nest being discernible even when it was known where it ought to be and where I knew it really was. This is notably so where a Bob-white was



Nest of Wood Thrush in Forsythia Bush



Wood Thrush Watching the Camera

snapped near her nest and in front of a stump of a decayed tree; where a Brown Thrasher was taken sitting on the nest; and where Song Sparrows and Towhees were taken while near or on their nests, all birds having been kinder to me in the matter of posing when away from the immediate vicinity of their homes and while visiting me at mine. Occasionally, owing to the location of the nest itself and the natural arrangement of foliage and limb, it has been possible to snap the nest at some time when the bird was off and when the eggs were still there, thus securing the desired picture effects without removing the nest itself and without scaring the bird away. Now and again an abandoned nest has yielded at least a single egg, and in some cases an egg fails to hatch with the others, or is left there, being the survivor of the other two or three that generally comprise the full set and that have been destroyed by some enemy. In this way a number of eggs have been secured, but I have never thought it necessary to rob a nest in order to examine the eggs, as a single egg and an inspection in the nest of the others comprising the clutch offer abundant opportunity for securing any information necessary for purposes of study and investigation. Having taken whatever photographs were necessary in order to make comparisons and to preserve memoranda of

formation, location, and general environment, nests are taken apart for examination, the materials used in their construction ascertained and records checked up. By this time the reappearance of those of the migratory groups that nested with us during the Summer and retired to the woods during the moulting season, but have not joined in the general exodus southward, and the arrival of the advance guard of Juncos and Tree Sparrows warn us of the approach of a coming campaign, and another interesting problem, viz., that of caring for our birds during the Winter is presented.

What we have done to add to the comforts of the Summer visitors has been done more as a pleasure than as a duty required by any existing necessity, for Spring and Summer impose few hardships on our feathered friends even if no improvised shelter is provided and the natural food supply is not supplemented with that furnished by considerate neighbors. The pleasures of the Spring and Summer however become the obligations of the Fall and Winter and a little help is needed now more than ever.

Naturally those living in the country or in the suburban sections have greater opportunities for contributing directly to the comfort of birds than have residents of the cities, towns, or built-up localities and many whose surroundings permit,



Wood Thrush Pays a Friendly Visit



Birds Learning to Take their Own Pictures. Shutter Release Governed by Thread Attachment

assist in providing shelter, food and drink. Methods available and used in providing Winter shelter do not make the formidable showing presented by the houses or boxes furnished for Summer use, but there is much that can be done in this direction after all.

For example nests occupied during the Summer by Flickers and Woodpeckers, should not be disturbed, but left as they are. This course would be followed anyway in the majority of cases as the nests are tree or log cavities and naturally would be let alone, but we have these birds nesting at times in prepared shelters and prepared cavities and these are sometimes removed when the general cleaning of boxes takes place in the Autumn. These birds at times gather food and hoard it for Winter use, and I have known a Downy Woodpecker and a Red-headed Woodpecker to use the Summer nesting holes for a Winter shelter and occupy them in severe weather. They certainly are ideal shelters in a driving snow-storm and we have many of these between Autumn and Springtime.

Then the Robin that has built her Summer home on a projecting bit of wood under the overhang of the house roof and in this way has indicated a preference for conditions offering a partial shelter from wind and rain may use a rest box if such is advantageously placed, to avoid the driving snow, and it

is well to add sides to these and place a few about on the chance of their being occupied. The same rest that was nailed on a tree in the Summer and remained unoccupied, was placed on the side of the house after sides had been added and a bit of excelsior placed in the bottom, and was occupied by a Robin during the severest part of the Winter.

A Bluebird and a Chickadee have been known to take advantage of the shelter and warmth offered by an enclosed space, and occupy it at least at night and in midwinter. Why not install a few of these boxes on the chance of their being used?

Leave an open space in the side and front of the barn large enough to permit a bird to enter, and conspicuously seen on the outside, located about fifteen feet from the ground level. This should not affect the temperature sufficiently to cause injury or discomfort to any horses or cattle housed, and a belated Owl or a wandering Swallow will pretty surely take advantage of the opportunity and get in out of the wind and snow. And if the Owl likes the place there will not be a mouse or a rat to be found there in a week's time.

There is another help, the wind screen, that I have never seen placed in use by anyone else but which I have found is generally patronized. This consists of two pieces of board, each piece six feet in height

and six feet in width, placed on the ground in upright position, at right angles. On both sides of each of the two pieces about ten or twelve inches from the top and running horizontally the full width of the board, is placed a rail or perch set out four inches or so from the surface. This screen is placed in the open near a raised food box and exposed to the sun, affording a resting place one side of which is at all times protected from the wind, with the added comfort at times of a sun parlor. If you have ever been at the end of a dock on a windy day you have observed that the settee for loungers, placed on the sunny side of the freight house and protected from the wind is always occupied, and that standing room on that side is at a premium. Birds are appreciative in many respects, and if you look at your wind screen you will find that at some time during any cold or windy day, if the sun is shining, the perches are well occupied by birds taking a sun bath, escaping from the wind, or enjoying both of these pleasurable sensations at one and the same time. You will be surprised at the number availing themselves of the apparently small comfort afforded by a screen so arranged and so placed.

The food problem during the Winter is of comparatively easy solution for those willing to help. It only requires a little attention at regular intervals

and involves almost no expense. A piece of suet, or other fatty substance, together with bread and cake crumbs, will form a good base for a food supply, augmented by a bit of grain seed. Among the Winter colony we will recognize many that were with us during the Summer including the Woodpeckers, Flicker, Ruffed Grouse, Blue Jay, Cedar Waxwing, Goldfinch, Chickadee, Bluebird, Nuthatch, Owl and Bob-white, while occasionally a Catbird, Robin or Sparrow will also remain. These, with the Junco, Brown Creeper, Tree Sparrow, Winter Wren and birds pausing here on their flight farther South, include those most in evidence.

An assortment of hemp, millet and sunflower seeds, with a few oats, will satisfy the smaller birds, beech nuts, chestnuts, acorns or corn will feed the Blue Jay and almost any sort of grain or chaff will keep Bob-white and the Ruffed Grouse. This is variety enough, for with the exception of the seed and weed eating groups, most of these birds will eat the suet and softened bread or cake crumbs and will live on these if nothing else offers. Of course the above menu may be added to in many ways if desired, dried raisins, apples, or other fruit being very acceptable, but if the birds cannot have these they get along very well without them.

For feeding purposes the suet may be tied with



Nest of Towhee, on the Ground in the Woods, at Foot of Oak Tree



Towhee Drops in at the House for a Social Chat

string on a tree limb. Any device holding food to which the birds have access will answer for the rest of the food though some of the many food boxes or stations in use are much better than others. Such a box should be placed at a height of five feet or so on a pole or post in the open, where the sunshine can reach it and if the construction provides for a revolving box, the side open to the birds may always be sheltered from the wind, thus preventing food from being blown about and sheltering the bird as well. Boxes of this sort, so designed that the wind itself keeps the open side sheltered, may be purchased from those who deal in devices and are well worth their cost.

An alternative for a food box, placed in the open is a window box or shelf, placed on the outer sill or ledge, where it can be reached, with a slight opening of the window. This is preferable where it is desired to observe, at close range or to get acquainted with the more friendly of the visitors, but some of the birds will visit a box a few feet distant from the house and will not venture as near as the window ledge. The installation of boxes both in the open and outside the window would solve the problem and both sources would certainly be patronized.

Water for drinking purposes must be found in some way of course, the necessity for providing it

being greater than that existing in the Summer, for streams and ponds are frozen over much of the time and are not accessible. A pan or dish may be used for this purpose in lieu of anything more formal and even in mid-winter there are times during many days when ice will thaw and when water so exposed will not freeze. Anyone who has witnessed birds seeking a drink from thawing ice or snow, will understand how much water means to them and will feel repaid for any trouble involved in providing such a supply.

CHAPTER VIII

Bird song and bird language. Age of birds. Plumage. Color scheme.
Birds to be studied in New York City.

BIRD song and bird language have always been an interesting if not fruitful topic of thought and discussion and if little space has been given to this phase of bird study, it is because, in the first place, I am not able correctly to represent on paper by words, marks, or symbols the sounds uttered by most of the birds, nor can I conscientiously quote others on this point, for though an effort has been made through the use of musical bars to convey an accurate impression of these sounds, I have heard all the written scores interpreted instrumentally and with very few exceptions, including some of the notes of the Robin, and those of the Phoebe, have failed to recognize in the sounds produced those uttered by any of the birds it has been my good fortune to hear. I would as soon expect the reader to become proficient in the art or pastime of skating by reading a book entitled "How to Skate," as I would expect that a

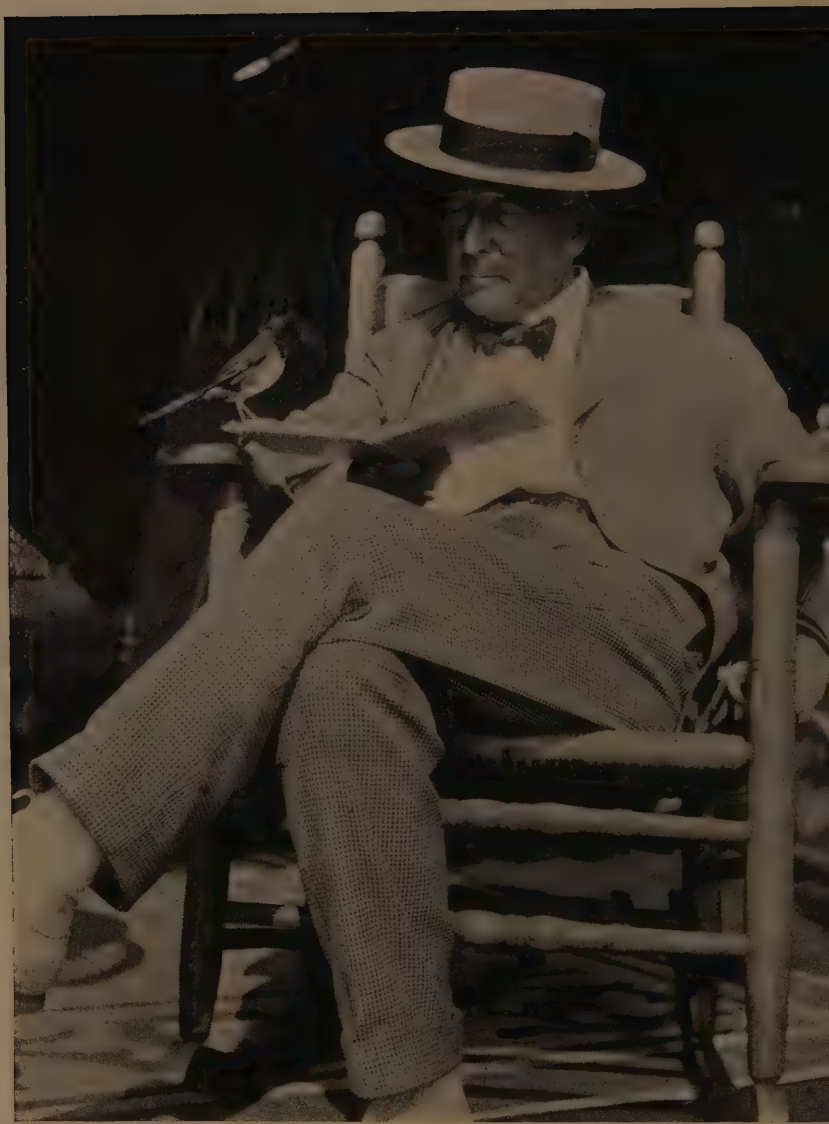
correct idea of bird calls or songs could be conveyed by pen and paper sketches.

In the second place I find it a bit difficult to explain to others matters concerning which I myself am ignorant and I have no thorough or scientific knowledge of bird language, however humiliating or damaging the admission may appear. A well known writer on nature study confidently asserts that a knowledge of such language is of great assistance in the study of birds, a sage and perfectly credulous statement obviously true. Of course it is. A knowledge of the means by which thought is expressed is a very distinct help in studying man or animal. The same authority follows the assertion quoted with a recital of what many of the birds are conversing about, a very considerable part of an interesting book being given up to the interpretations of bird thoughts and their utterance, and other writers of less fame, fearing no doubt that they may be considered ignorant concerning what is made to appear a very ordinary accomplishment, hasten to admit that they too understand the language and know what the birds say, a statement meeting with slight credence however suggestive it may be of an abnormally cultivated imagination.

Concededly birds express their feelings and emotions through the medium of song and find a way of



Towhee Waiting for the Dining Room Door to Open



Towhee Examining First Proof of "Birds I Have Known"

communicating their thoughts to others of their species through a variety of sounds which we term "call notes" and these constitute what we properly refer to as bird language. Observation has taught us that under given conditions, certain notes are generally uttered by birds of the one species, for example, a certain note is used when the manner and actions of the bird give every indication of fear and alarm; another note is used under conditions suggesting contentment or satisfaction; while still another note is used when apparently exchanging a salutation or greeting, each species having as a rule, a distinct call note of its own, from all of which we may draw inferences and conclusions reasonably warranted, but this is as much as I am prepared to concede so far as any knowledge of the avian language is concerned. I have not the slightest idea what the little songsters are talking about nor do I believe that any one else possesses such knowledge.

Usage and long established custom have led us to distinguish in the call of the Whip-poor-will the repetition of its own name, while the words "Bob-white" are quite as distinctly heard in the call uttered by the bird bearing that designation (though I have always thought he says nothing at all but whistles it), tradition doing much to foster these and other pleasing fancies which a vivid and complaisant

imagination has eagerly nourished. This is as it should be and is all right in its way though presenting no reason why we should state as a fact, what of necessity is a palpable conjecture. We can well continue to hear the "Whip-poor-will" and the "Bob-white" of the birds without claiming a knowledge of bird talk, a claim which can serve no other than legendary purposes and which it is difficult to imagine is seriously believed in by the writers themselves. As already stated call notes are the medium through which the thoughts of birds are expressed, and constitute the bird language. No one doubts that there is such a language. What I do doubt is that any human being can correctly interpret, understand, speak, read, or write it, authorities to the contrary notwithstanding.

Whether the birds inherit or acquire the notes and songs used by them has not been determined by any process that will stand the test. A friend tells me that he undertook scientifically to raise a family of Chickadees, placing three of the eggs in an incubator. Two young were hatched, the third egg not being productive, and when the two young birds were old enough to make sounds that could be recognized, both uttered the call used by their own species, which would seem to favor the theory of inheritance, in this instance at least and so far as the call notes are con-

cerned. On the other hand growing birds have apparently appropriated the calls uttered by those within hearing. No test of wild birds conducted while the bird is in captivity would appear to be convincing or of much value however, as the unnatural surroundings and conditions preclude satisfactory results. There is no doubt that the desire to imitate is strong with some birds and that they have the faculty of appropriating the notes, and parts of the songs, of species other than their own, for I have frequently looked at the Brown Thrasher and at the Catbird and heard from them the call or the song of a different species, so it may well be that in some instances at least, both call notes and songs have been acquired by the nature of the surroundings and by the lure of imitation.

In song the male of the species does the singing for the family, the female being seldom heard in this way, contenting herself with the call notes used for greeting, hailing or conversational purposes. The song season with most species is practically the mating season and may be said to extend approximately from the middle of May until the middle of June or a week later. Some birds mate earlier in May and we may hear an occasional song later than at the expiration of the time indicated, but singing and mating seem to go together and the songsters are

heard most frequently and at their best at this time. Those heard earlier and later are the stragglers and their songs appear to be delivered in a half-hearted manner.

Some birds, like the Ruffed Grouse, Flicker, and Red-headed and Downy Woodpeckers have substitutes for vocal expression though they also occasionally indulge in short notes, approaching in sound a chuckle or a whistle. The Grouse, for example, by a rapid movement of wings produces a drum-like sound of considerable volume, which it is generally supposed notifies the mate of his presence, while the Flicker and more persistently perhaps the Downy and Red-headed Woodpeckers, play a lively tattoo with their bills upon the surface of tree or log, not always when in search of food or when digging a cavity. The controlling desire seems to be to attract attention by making as much noise as possible, from which it would appear that in some respects at least, birds are not so very different from men after all.

The age to which wild birds attain is not known. There are those who inform us concerning the average life of a number of these birds, but much of this information should be skeptically received or discredited altogether. The fact is no method has been devised offering a satisfactory solution of the problem. Obviously no data can be secured through

observation of the bird itself for such observation is in the very nature of things impossible. It has been thought that some light might be thrown on the subject by watching birds in captivity, but all the conditions surrounding such a test are so unnatural that any result would be absolutely worthless. If birds bore distinguishing marks indicative of age, as do trees, and the bodies of a number of any one species dying a natural death could be procured, an examination of these bodies together with a mathematical calculation might produce results interesting if not conclusive, but with our present facilities for gathering information, the problem seems hopeless and any attempted solution would be purely speculative.

Bird plumage with its many features of interest has been briefly referred to in connection with the moulting season and elsewhere.

Brilliant colors are worn by the male only, except in rare cases, the female being more modestly and quietly attired. When the bird leaves the shell, if he belongs to what may be called the præcocial group which include Bob-white, Grouse, Sandpiper, and the Duck family, he is provided with a suit of clothing of soft material which enables him to get about as soon as he feels strong enough and with little or no delay. If he is included in the altricial group as are most of

the other birds with which we are familiar, he is born with no clothing at all and must wait until a covering of feathers is grown. This growth is rapid however, and within a week or ten days he is able to leave the nest, the feathers having assumed a distinct coloring. From that time on as he grows older he is occasionally provided with a new suit without any worry or thought on his part, even the colors being selected for him. Not only has he one suit for Summer wear and one of distinctly different color for Winter use, but in different parts of the country various colors may be provided. This does not apply to all species, and where both sexes are marked alike as are the Robin, Catbird, Thrasher, Wren, Jay, Sparrow and others, practically the same dress is worn the year around, though of the Sparrow group, the| subspecies takes on different hues and shades when in different localities, the variation being due probably to climate.

The appropriateness with which the tree dwelling birds with their conspicuously colored dress are screened from view by the foliage of the woods, and with which the ground nesting variety are provided with a protective coloration which makes it difficult to distinguish the bird from the background of leaves, grass and ground, has already been noted.

It is possible that the color scheme has some

bearing on the rule giving to the male of the species the exclusive privilege of uttering the songs for which birds are famous, in view of the restriction giving to him also a practical monopoly of brilliant and conspicuous plumage.

For the same reason that a traveler abroad, if impressed with the picturesque Italian sunsets, returns to this country in the belief that he has seen something that could not have been seen at home, many of those desirous of stimulating an interest in bird life are fully convinced that if they could spend the summers in the country or other portions of the year in Southern Florida or in California, the habits and surroundings of the birds would receive much of their time and study. It is the old story of the lure of the distant and unattainable, shown in the lack of appreciation of conditions, present and within our reach, for I have seen as beautiful a sunset from a bench in Battery Park in the City of New York as I have ever viewed from the Bay of Naples; and in Central Park, Prospect Park, and Bronx Park, all located in the midst of our City Boroughs, birds of different species are plentiful enough to occupy as much of our attention as our time and leisure will probably permit. This statement is not intended to help those who go through a wooded district as they go through the World, unobserving, but to any one

who will keep his eyes open and look with a desire to see, a trip to these Parks will prove a revelation.

In Prospect Park for example, the variety of birds found during the year has been noted and has been tabulated by the Children's Museum in Brooklyn Borough, to which institution I am indebted for the following data.

During the summer months we find those birds that have wintered in the south, or south of New York City and have returned to nest and remain in the Park during the Summer. The list includes the Purple Grackle, Flicker, Catbird, Chipping Sparrow, Black-billed Cuckoo, Cowbird, House Wren, Wood Pewee, Scarlet Tanager, Yellow-throated Vireo, Yellow Warbler, Crested Flycatcher, Sparrow Hawk, Fish Crow and Yellow-billed Cuckoo. Of these the Flicker and Robin occasionally remain during the Winter, and in addition to those named the Night-hawk and Chimney Swift are both in evidence though nesting outside the Park.

In the Spring and Autumn we have the migratory birds that are journeying to the North and to the South, and that pass through the City on their way to their destinations. The list includes the Solitary Sandpiper, Spotted Sandpiper, Cedar Waxwing, Cliff Swallow, Bank Swallow, Barn Swallow, Towhee,



Nest of Brown Thrasher, on the Ground under Small Cedar Tree in the Open



Brown Thrasher Poses for his Picture

Indigo Bunting, Blue Jay, the White-crowned, Swamp, and Field Sparrows, Kingbird, Phoebe, Yellow-bellied Sapsucker, American Osprey, Sharp-shinned Hawk, Coopers' Hawk, Red-shouldered Hawk, Red-tailed Hawk, Oven-bird, Water Thrush, Redstart, Winter Wren, Brown Thrasher, Ruby-throated Kinglet, Bluebird, Hermit Thrush, Gray-cheeked Thrush, Olive-backed Thrush and Maryland Yellow throat, with eighteen different varieties of Warblers. In addition to these the Purple Martin, Cardinal, Yellow-bellied Flycatcher, Duck Hawk, Red-headed Woodpecker, Bald Eagle, Bob-white, Marsh Hawk, Woodcock, Turkey Vulture, Great Blue Heron, American Bittern, Least Bittern, Pied-billed Grebe, Canada Goose, Wood Duck and Blue-gray Gnatcatcher have been seen but their appearance has been of rare occurrence and does not qualify them as frequent visitors.

During the Spring the Crow, Carolina Wren, Purple Finch, Meadowlark and Red-winged Blackbird have occasionally appeared.

Winter visitors arriving from the North and remaining here until Spring include the Red-breasted Nuthatch, Pine Siskin, Long-eared Owl, White-throated Sparrow, Junco, Goldfinch, Brown Creeper, White-breasted Nuthatch, Fox Sparrow, Northern Shrike, Chickadee and Herring Gull, the appearances

of the Nuthatches, Shrike and Siskin being irregular and that of the Long-eared Owl rare.

The Black Duck, Screech Owl, English Sparrow, Song Sparrow and Starling have been seen at all seasons of the year.

From this very remarkable showing it is evident that those obliged to remain in the City are not shut out from all participation in the pleasure of watching these interesting Park residents and that to some degree at least, their studies may be pursued at home. This fact has been recognized by those shaping the course of instruction in our Public Schools and children have for some time been given a course in nature study with opportunities for seeing the birds in their home surroundings through visits to the different public Parks. Some teachers spend half a day at intervals in the Parks with their classes, and Miss B., an instructor and a close student of bird life, who has visited us many Summers, tells me she has counted in the Autumn, at least sixty nests located in the section of Prospect Park bordering on Flatbush Avenue.

CHAPTER IX

Impressions received from bird study. Knowledge of species not to be acquired by study of one of a group. All of one species not alike. Nest construction and location vary. Birds should be studied and not pedigrees. May be observed at close range. Deductions from close up study. "Atmosphere" necessary. A one man job.

It would be strange if the investigation of as interesting a subject as bird study failed to create some impressions more lasting than others, and if some of the observations made in the course of such study should not be thought sufficiently important to warrant a note for further reference. The theme, has so many attractive phases viewable from so many different angles that seemingly scarcely a day passes without something new being brought to one's attention or some new impression received. This is no doubt more noticeable during that part of Spring-time devoted to mating and nesting, but even at other times of the year the unexpected, the surprising and the novel are constantly presented and there is much to be learned. Of course no two persons see in any one object or occurrence the same thing.

This is demonstrated in a commonplace manner in the case of those viewing a street accident or disturbance. No two of a dozen witnesses to such an occurrence can be found to testify to exactly the same state of facts concerning the details submitted though all of the dozen were present and saw what took place, nor will any two persons, under like conditions, agree upon the value or importance of impressions precisely similar. I propose however, to refer briefly to some of the impressions received during a long period of close observation, which appear to me likely to be of interest or rather I shall note some of the conclusions arrived at as a result of such observation.

On the subject of providing housing facilities for birds nesting in shelter boxes, much has been written and the matter pretty thoroughly covered, yet the construction of many of these boxes impresses me as faulty.

For example most boxes are made too large, notwithstanding the information available regarding a standard of size, and an examination of the interior of some of these shelters after nesting season and when the birds have departed, would appear to justify this conclusion.

It is true birds will sometimes do the reverse of what is expected, and will build in structures much



Brown Thrashers (Young) Waiting for the Mother Bird



Brown Thrasher Enjoys a Good Story with his Luncheon

larger than their needs require, but as a rule they are discriminating in favor of suitable quarters and if given a choice will build in shelters constructed and installed substantially in accordance with approved standards.

Then too, in such a small matter as the arrangement of a rest or perch designed for convenience in entering the box, such aid is frequently, in fact quite generally, placed directly under the entrance hole. This I am satisfied is suited to neither the comfort nor the convenience of the bird. A rest of some sort should be placed below, and at the right or left of, the hole, preferably at the right. A perch so placed permits the bird to enter the box with apparently no awkward change of direction, or fluttering, such as appears necessary when making use of the rest placed directly under the entrance. This I have noticed frequently in the action of a Wren, a Bluebird and a Tree Swallow in entering and in leaving the shelter. Where two houses with the perch directly under the entrance were placed near two other houses in which the rest was below but at the right of the hole, the latter described boxes were the first two selected for occupancy. Natural tree cavities used by some birds have, of course, no perch so arranged, but a convenient branch or twig frequently furnishes a rest for those desiring it, while Flickers,

Woodpeckers, and those of the tree climbing and clinging variety seem to get along very well with no artificial aids. As a matter of fact a Bluebird occupying a box upon which the perch had become loosened and detached, managed to get in and out without any resting place at all, though with much apparent difficulty and discomfort, until the perch was again placed in position.

In the study of the bird itself some impressions seem to stand out among the many received.

For example, the history of a species cannot be ascertained from the study of a single member of that group. This is to be borne in mind as of the most importance, for though the phrase itself is so palpably the statement of a self evident proposition that its notation would scarcely seem warranted, the mistake of proceeding upon a different theory is frequently made, more often in the early stages of investigation. There must be a first time for everything and it is often the case that a bird seen and observed for the first time does not reappear, nor do others of the same kind afford, by their presence, an opportunity for further study, the result being that the appearance, manners and habits of the one bird are assumed to be characteristic of the species, a perfectly natural though not a safe method of reasoning. It is clear that the only way in which a correct

line on bird life may be obtained is by the study of a number of the same species under conditions and surroundings similar and as varied as possible, and an average struck. The birds will be found to vary but little and yet just enough to make an individual study an unsafe guide for the formation of general rules. I can recollect very well my surprise and disappointment on reading from the book of a credited authority that a named bird showed prominently certain characteristics, for my observation had taught me the reverse and I was loath to believe that the writer of the article knew so little of the subject under discussion. Further observation on my part made possible by the presence of other birds, convinced me that the one I had carefully studied was an exception to the rule and that the article read by me correctly expressed conditions when applied to the average of the species. It was a satisfaction to me to be able to prove myself in the wrong, as otherwise I would doubtless have continued to regret the lamentable exhibition of ignorance displayed by the author referred to.

All of the same species are not alike either in appearance or habit. This is true as to color. With no reference to the moulting season with its attending change of plumage on the part of many of our birds, all of one species are not of the same hue and some

change very perceptibly in different localities. For example, of several Robins of the same growth, one will be found with a breast of dingy hue instead of the clear dark red of the others, and an occasional Bluebird will appear with a faded washed out coloring unlike that of his companions. The Song Sparrow will vary much in color in different sections of the Country, and at times resembles very slightly the bird we know here.

Poise and habit are not always the same, though in these respects the species are generally alike. A Catbird may appear less nervous and jerky in his movements than his neighbors and a Blue Jay may be found apparently less alert than the others of his group. In nesting season one Brown Thrasher will not visit the feedbox, patronized by his associates, and a Wood Thrush will apparently have nothing to do with a nest being constructed by his mate, while another of the same group assists the female in building their home. Nuthatches will continue to lay eggs with brown spots, Chickadees will do the same, and Bluebirds give us an egg of bluish white, or pale blue in color, in all of which cases the eggs are laid in cavities, holes or boxes where we are led to believe a pure white is the orthodox shell appearance.

Variation in construction and location of nests is



Bob-white Near Nest. A Good Illustration of "Protective Coloring"



Bob-white. An Inquisitive Neighbor

not unusual. In nest building one Catbird builds in a thicket almost inaccessible except to himself, and another builds in an open Forsythia bush, five feet from the ground and within a foot of a much frequented path. One Robin builds of mud, grass, roots, twigs, leaves and paper, and another constructs a nest wholly of mud and seaweed. A Veery, evidently of sporting lineage, adds to the customary collection of twigs, roots and leaves, a generous supply of clippings from a morning newspaper containing references to "scratches," "non starters" and "post positions," while a Baltimore Oriole adorns his wonderfully constructed sleeping bag with windows which are supposed to be exclusively used by another member of the family, the Orchard Oriole.

Obviously it would be misleading to say of any species that the selection in nest construction is confined to certain materials, or to state any hard and fast rule regarding location of nests, for birds will use what materials they like for building purposes, and will locate where they choose, there being always some that will consult their own preferences both as to how they shall build and where they shall build and then act accordingly. While there is a general resemblance between nests built by one species, it is difficult at times, to identify those of different groups and the only safe method I know of in deter-

mining the occupancy of some nests, is to see the bird in possession.

Birds should be studied, in preference to pedigrees and biographies.

Make a careful and painstaking study of your bird when opportunity offers and note the results as you find them. Do not be discouraged and conclude you have made a mistake if your diagnosis differs from that laid down in the bird books. For the purpose of observation disregard any thing the credited authorities and a score of legendary writers may have told you, and study the bird for what you find in him and not what others say you will discover. You will at least have the satisfaction of knowing your own bird however well he may be disguised when described by others. This does not mean you are not to read your Burroughs, Seaton, Chapman, Pearson, Reed, Gilmore or whoever your favorite writer may be. Read them and get the benefit of their experience and knowledge but when you study your bird from life, do so conscientiously and arrive at your own conclusions.

Many birds may be observed as readily at close range as at a distance. It is largely a question of time, patience, the exercise of good judgment, and a fair amount of what may be termed "racing luck." No difficulty should be experienced with the more

commonly known varieties in making them feel at ease about the house and immediate surroundings, in fact because of the difficulty experienced in visiting them at their homes in the woods, I concluded it would be very much more convenient and satisfactory to have the birds come to me, and my plans were made accordingly.

The baths and drinking cups, for example, had originally been placed about one hundred feet from the house, the foodbox, used at times during nesting season, was located perhaps fifty feet away and the nearest bird box installed in a tree about fifty feet distant. The bathing, drinking and feeding facilities were being made full use of when the baths, cups, and foodbox were all moved to within eight or ten feet of the house, and the bird boxes moved up until the nearest one was within the same distance. The birds moved too. The boxes were occupied, and the other facilities generously patronized soon after the change was effected and instead of my visiting the woods in search of information, the birds came within a few feet of, if not on, the house porch, and looked us over, apparently not at all disturbed or even concerned by the changed conditions.

Quite a little space is given elsewhere to the friendly relations existing between some of the birds and myself, though necessarily but few of my experiences

in that respect have been the subject of reference. Enough has been said however, to indicate the conditions under which these personal intimacies have been established and to suggest the satisfaction and the fascination with which these friendly advances on the part of the birds have been received and encouraged. No one who has not experienced the pleasure occasioned by the near approach of these trustful little creatures, who has not shared with them on home porch or under the shade of a neighboring tree his chair, his book, and even the companionship of his cigar, or who has not felt the strange and almost uncanny sensation caused by the physical touch of these birds of the Wild, can understand just what such situations mean to one who has long observed and studied at a distance. Those fortunate enough to have established conditions making possible an inspection and study at close quarters have done so at the expense of much time and patience and have no doubt speculated upon the best means of insuring a continuance of these relations, being keen to observe on the part of their visitors signs of uneasiness or fear. At least this thought has been uppermost in my own mind at such times and I have carefully noted surroundings and conditions, watching closely the attitudes and movements of my guests with just this idea in mind, namely, that of eliminating any

cause for alarm and consequent flight and my deductions in connection with this intimate phase of the work appear warranted.

In the first place so far as environment is concerned, any attention or interest that the bird may for the first time manifest in your presence is most likely to be stimulated among surroundings with which he is familiar, therefore his first impressions would best be made on his own ground, preferably in the open and near the edge of wooded land. If interested he will watch your movements, will gradually accustom himself to your presence and will soon look for your visits as a matter of course. It will not be long before force of habit and curiosity will lead him to join you and further observation on your part may be made in the immediate vicinity of your own home, assuming of course, that your place is provided with the added comforts and inducements referred to elsewhere and which prove sufficiently attractive to insure a return of the visitor.

For close-up work "atmosphere" is essential. Success in the study and observation made possible by the near approach and confidence of the bird depends absolutely upon the choice of fitting surroundings and upon the existence of favorable conditions.

Quiet is necessary. It is true that all sounds are

not disturbing to birds and that many continuous, constantly recurring sounds, or those frequently heard and to which they have become accustomed, seem to receive from them ordinarily little if any notice. On the other hand sudden, unexpected, and unfamiliar noises startle and alarm. I have known them to pay little attention to the noise occasioned by a nearby passing railway train, or by a passing motor car and to take flight instantly at the slam of an outside door or at the raising or lowering of a window.

This feature of the work is a one man job and must be conducted alone. It is a selfish way to enjoy one's self no doubt, but to induce these birds to visit us on terms of companionship one must work alone and without interruption. The presence or the approach of others distracts the attention of the bird or more likely frightens him off and all preliminary work is of no avail. I have frequently fed birds from my hand on the porch of our house within sight of others sitting near, but it has seldom failed that some one has moved or has been guilty of loud talking or laughter and the bird in this way frightened away. There is only one sure method of proceeding and that is in solitude and plenty of it.

The student must himself remain quiet. Quick movements are at all times destructive of any degree

of intimacy between student and bird and the latter is very keen in observing and almost anticipating any movement particularly of either hands or feet. If a move is necessary it must be as slowly accomplished as possible or the bird is alarmed and is off.

Birds are afraid of, or resent, stroking or handling. Naturally one is tempted when at such close quarters with these visitors to stroke or touch with the hand the object of interest, but I have never seen a wild bird that would permit me, except when on the nest, to even touch him with my hand. They will rest on the arm of my chair, light on my knee or book, remain for some little time on the palm of my hand while eating, and will take a bit of seed or berry from my finger tips, but any attempt at further familiarity is followed by instant flight. From curiosity I have tested this many times, but always with the same result.

CHAPTER X

Need of additional bird Refuges. An appeal for bird conservation.

THE desirability of extending through the medium of Bird Reservations the protection already furnished wild birds has long been recognized, but we do not seem to have made much progress along these lines. Something has been done it is true, and land and water here and there have been set aside and designated as Sanctuaries or Refuges within the boundaries of which birds may live unmolested, but what has been done is such a small part of what could be accomplished that it seems we have comparatively little to show for years of thought, energy and hard work.

We now have some seventy such Reservations designated by the National Government and distributed in various sections of the United States, Washington leading the list in point of numbers with eleven, Alaska and Florida following closely with ten each, California, Oregon and Louisiana with four each, with some of the other states numbering each three, or two or one; Islands in Hawaii and in Porto



Bob-white. Getting Acquainted

Rico being included in the last group mentioned. New York State has not as yet any such refuge.

The first of these National Reservations to receive official recognition was that located in the Indian River, Florida, on an island since known as Pelican Island. This was in 1903. For many years I have made the trip from St. Augustine to Miami or to Key West, by motor boat, via the Indian River route, passing Pelican Island on the way and have seen there thousands of Pelicans sunning themselves on the shore. Like provisions have been made for the protection of bird life, and Sanctuaries have been established in some states owned or supported by residents of Cities or Towns or by Bird Clubs.

The National Association of Audubon Societies which originated the idea of Government Bird Reservations, whose agents hunted up and recommended suitable places for such Reservations and which for many years paid the salaries of the Wardens guarding them, also protects forty-five of its own Bird Reservations scattered from Canada to Mexico. Meriden, N. H., has a large one owned and supported by the Bird Club of that City and a few other Cities have restricted sections supported through the generosity of the public. Some of the New York City Parks recognize the existence of the Bird. Prospect Park located in the borough of Brooklyn, has some two

hundred bird boxes attached to trees, and in the winter a number of food boxes are supplied every other day with cracked corn. Some shrubs and bushes, fruit bearing, help out in the Autumn, and for water the lakes, streams and fountains furnish the supply except in winter when the flow of water in the fountains is shut off. If the birds are thirsty then and the lakes and streams are frozen up, the birds wait for a thaw or at least I suppose they do, as no other source is available for drinking purposes. I should very much like to offer some constructive suggestions regarding the means by which these Reservations, would become more numerous, but the ground has been pretty well covered by others and my ideas have in them little that is original.

The cemeteries could be used of course, and I can see no reason why they should not be utilized. This suggestion is as old as the hills, but it is a good one and will some day be acted upon I fully believe. They are just the places for bird houses, drinking fountains and flowering and fruit bearing shrubs, trees and bushes. The presence of these additions would not militate in any way against the appearance or sanctity of the enclosure and the surroundings are ideal, or could be made so at no expense, for bird conservation.

City Parks could extend their hospitality to in-

clude a more varied menu in the Winter, and a water supply when most needed.

Golf links could well afford a refuge to the birds of the neighborhood and lend themselves to the installation of housing, food and water supply very readily. Why not try it?

Fishing and game clubs have, many of them, wonderful facilities for attracting and housing birds, the natural food supply provided by shrubs and trees being abundant.

The shooting season might become a bit noisy where game other than birds were provided in the Reservation, but I have in mind a fishing club of considerable acreage where the conditions are ideal for bird conservation and I have no doubt there are many such places.

It is to be hoped that the idea for which the National Association of Audubon Societies was originally responsible, of utilizing conditions wherever found for purposes of protective reservations, may be further developed and that additional facilities for such protection along these lines may be devised. Cities, where the noise and growth of business have naturally crowded out the comparative quiet and the trees and foliage of the suburbs, present the greatest difficulties to be met.

Before proceeding to discuss in detail some of the

birds engaging our attention, I want to make a brief appeal for bird conservation and protection, for it has been with this purpose in mind that the threads of observation and study have been gathered together and made a matter of record. Many like appeals have been made, in language and form much more interesting no doubt than anything offered here, but on the theory that a good cause, even if poorly presented, is entitled to support, this plea is added to the many others.

How can you help? By reporting to the authorities any flagrant violation of the bird protective laws brought to your attention. On Long Island information regarding such violation may be sent to the Division Chief in charge of Game Wardens, 42d Street and Broadway (Times Building), New York City, and in all sections of the State may be found Wardens or other authorized officials who will investigate reports and prosecute where the facts presented warrant. By providing housing and drinking facilities in the Summer, if you live in the Country or in suburban localities, with a food supply added to these during the winter months, and by affording protection against cats and other natural enemies: By contributing your moral support, joining your local bird club, if there be one and identifying yourself with the cause these clubs represent:

By affiliating in some manner with the National Association of Audubon Societies, and helping sustain it in its organized and systematized work: and last but not least; By bringing the matter of bird welfare to the notice of others when opportunity offers, and securing from them their pledge of support.

Why should you help?

Because the problem of protection to birds touches your pocketbook, and because any help given these little neighbors from the woods is sure to be prompted by impulses kind, generous and humane.

The dollar value of the bird as a destroyer of predatory insects has already been referred to and is treated at some length in the notes which follow on the different birds under observation, in fact the detail with which this feature has been treated in order to demonstrate the value of each species, is apt to prove tiresome reading, but the difficulty has been to condense and yet do justice to the fund of information available. The economical phase presented may be dismissed however, with a repetition of the statement that the estimated annual loss in the United States caused by destructive insects amounts to millions and millions of dollars, and that the birds eat, kill or destroy these insects in such large quantities that through their activities an estimated sav-

ing of property valued at many millions is effected. As a distinct asset therefore the bird is worth our thought and attention.

To ask on humane grounds that our birds be permitted to go about unmolested and that they be sheltered and fed at times, seems unnecessary, for the chivalrous spirit is always aroused in favor of the weak and defenseless and these little songsters are not only dependent upon weather and other conditions for the food which sustains them, but because of their size and lack of physical strength, have practically no means of meeting an attack by forces other than their own species, except flight. Such a plea is justified however, by the fact that outside of those whose property interests are directly damaged, no one except the United States and State Governments will even listen to an argument based upon the economies involved and the humane feature is the only one in which the average citizen will manifest any interest whatever. And so the public are asked to help because to help seems the right and decent thing to do. These birds are not parasites. They are self-sustaining when the warmth of the Summer sun and the richness of the soil and vegetation furnish them the opportunity of supporting themselves, and they work early and hard for their living, but when the Winter months bring the cold and the ice and

the snow, they at times face death from starvation or from freezing and need a little help to tide them over until Spring.

In an endeavor to do away with the shooting of certain birds through the creation of a public sentiment opposed to such killing the work may not always be approached in just the right spirit. One of the greatest men of our day, in an appeal characterizes the killing of song birds for food as "wicked," and personally I cannot understand how a man can shoot a Robin for the purpose of appeasing an appetite for pot pie, but we are not all of the one mind and the act of shooting under these circumstances involves no question of moral turpitude. The Robin was for a long time treated as a game bird in some States, and I have seen them exposed for sale in some of the Southern Cities at seventy-five cents a dozen. The killing of the bird was permissible there, and a misdemeanor in an adjoining State. If a thing is morally right in one State it is morally right in another; whether it is or is not, an offense at law, is another matter. It would seem that in an effort to remedy what we consider undesirable conditions the question of morals might better be eliminated from any appeal if the best results of such appeal are to be obtained.

Get your friends interested in the doings of these

animated little music boxes and if possible get them to listen to the Wren, Brown Thrasher, Robin, Catbird, Wood Thrush, Towhee, the Warblers and the rest, as they utter their fascinating calls and sing their beautiful songs. It matters not what they say, if they really say anything, or what others think they say. Listen to them sing and fill in the words to suit yourself, for whatever the calls or notes may mean, they are tuneful enough, pleasing enough and sweet enough, to inspire any thought that is good, and we ought to be better for having heard them.

In the arrangement of the bird sketches which follow, the birds are not classified or grouped, but are named in alphabetical order for convenience in ready reference.



RED-WINGED BLACKBIRD

(UPPER FIGURE, MALE; LOWER FIGURE, FEMALE)

Order—PASSERES

Family—ICTERIDÆ

Genus—AGELAIUS

Species—PHENICEUS

National Association of Audubon Societies

CHAPTER XI

Some of Our Bird Visitors

RED-WINGED BLACKBIRD

(*Agelaius phæniceus phæniceus*)

THE Red-winged Blackbird, measuring about nine and one-half inches in length, is found throughout the United States east of the Great Plains and to the north, and breeds south of the St. Lawrence and in Mexico.

The male is black with the exception of the shoulders which are covered with a red patch bordered on the lower edge with yellow. The upper parts of the female are rusty black, under parts streaked with dull black and white. He is an early comer and the first week in March should find him in New York or its vicinity prepared for a long stay, for it is generally November before he leaves for the Southern States or south of that where he escapes the snows of mid winter.

His preference for marsh and lowland leads him to build his nest which is of tough grass and sometimes

cat tar

twigs and reeds, in swamps and in low bushes where such surroundings are available, and the eggs, white with black spots, and numbering from three to five, are laid close to the water.

As for his food habits, grain growers in the West have charged him with substantial losses owing to his fondness for grain, a bounty being placed upon him in some of the States. To ascertain the extent of damage done in this respect and to determine the economic value of the bird, over one thousand stomachs were examined under government supervision. Corn, wheat, and oats were found in quantities aggregating a little more than thirteen per cent of the entire amount of food consumed, but insects formed fully ten per cent, among these being beetles of noxious habits, including the snout beetle, one of the most destructive insects of which we have any record. Over seventy-five per cent of food eaten was composed of weed seeds, principally ragweed, barnyard grass and smartweed, and of insects, which would seem to more than offset the comparatively small percentage of grain destroyed and to justify the conclusion that the bird is a business asset.

His song is short and when first heard has more than a pleasing sound, but that is early in the season and before the musical contingent have appeared in force with their wonderful notes.



BLUEBIRD

Order—PASSERES
Genus—SIALIA

Family—TURDIDÆ
Species—SIALIS

National Association of Audubon Societies

Of the habits of the Red-winged Blackbird perhaps the tendency to breed and live in small groups is most noticeable, aside from which his chief claim to the attention of an observer would seem to be the bright red patch on an otherwise solemn looking and solemn appearing bird.

BLUEBIRD

(*Sialia sialis*)

If he is among those who have gone South for the Winter, the Bluebird is among the first to appear North in the Spring and announces his arrival with a pleasing note and a charming song.

He measures about six and one-half inches in length, and is one of the prettiest of the smaller birds, his head, back, wings and tail being of bright blue, his breast a reddish or cinnamon brown, with the belly lighter or near white. Both sexes have the same markings except that in the case of the male the colors are of a brighter shade than those worn by his mate.

This species breeds in all the states as far West as the Rocky Mountains, and in parts of Southern Canada, and winters either North or South according to his liking, the majority of the group leaving here in the Autumn for points in the South and a few remaining North throughout the year. In nest-

ing habits neither he nor his mate are as fussy as some of the birds and will build in a shelter box provided for the purpose if one is convenient and suitable, while if no one has been thoughtful enough to provide one of these, a hole or cavity in a decayed limb or trunk of a tree will do equally as well. Wherever he locates, the nest is built of dry grass, or grass and leaves, and here from four to six eggs, bluish white, are laid and hatched, two or three broods during the season being usually raised.

A very friendly and domestic little bird this, seemingly willing to join in what is going on around the house and yard, and not at all apprehensive of danger in making acquaintances. Economically the Bluebird may almost be classed as another one hundred per cent bird, for most all the food consumed consists of insects of destructive habits, and vegetable substances the appropriation of which is accomplished at no expense to anyone. In one of the Government's examinations for example some eight hundred and fifty stomachs were tested, the result indicating that insects and their kind composed sixty-eight per cent of the food consumed while the remaining thirty-two per cent was made up of vegetable matter. Of animal food beetles, caterpillars and grasshoppers constituted the bulk, while berries, seeds, sumac, ragweed and grass made up the

vegetable substances. Among the seeds found were those of the blackberry, but wild blackberries are generally plentiful when other fruit of the kind is obtainable, and there is no reasonable inference that those eaten were of the cultivated variety. A bird of such useful food habits should be encouraged and it is well to bear in mind that choke-cherries, juniper berries, pokeberries, holly, sarsaparilla, sumac and greenbrier, if planted about the place, will prove attractive to these desirable little songsters and may result in their making their homes with us.

The Bluebird is a friendly and sociable little body and because of its plumage is a bird whose actions and habits are noted with perhaps especial care. A couple had built in a cavity in a cedar tree and raised a family of five, and another pair was looking about apparently seeking a site for their home. Both of the latter were occasional visitors at my morning class and though remaining at a distance and taking no part in the proceedings when the corn bread and goodies were passed around, seemed to want to join us, and I was particularly anxious for them to locate with us. It was at this time that a reconstructed cracker box of proper size was placed in a neighboring tree and our visitors became, to my great delight, our new neighbors, in other words they occupied the box the second or third day after it was

installed. They enjoyed the drinking cup and the baths, but never so far as I know, touched any of the food placed on the foodbox. Friendly enough they seemed, but they never came as near as some of the rest and I could not get them to enter the class of what I call "porch birds." Perhaps others have been more fortunate. Accurate information regarding details in connection with the cracker-box nesting was not obtainable, except that four young were raised, and that one egg remained in the box, from which it would appear that five eggs constituted in this case the full set. It was also noted that the young were observed to have left the box twenty-four days after the parent birds had taken possession. When the birds had left I removed one side of the box and for the purpose of getting better light, the top also, thus exposing the interior. The box, which was five by five inches floor space and seven inches in height in the center, had an entrance hole one and one-half inches in diameter located three inches above the floor level. It was well filled with dried grass to a height a trifle below the entrance, and the nest loosely constructed. The white appearing in the photograph at the sides and at the rear of the interior are pieces of cardboard placed there to get a clearer view of the nest, the first photograph taken showing the nest very indis-



BLUE JAY

Order—PASSERES

Family—CORVIDÆ

Genus—CYANOCITTA

Species—CRISTATA

National Association of Audubon Societies

tinctly owing to the dark background presented by the boards. A bird box which a pair of Bluebirds, after having collected enough grass for a nest, deserted in favor of a box of equal size, but the entrance hole of which was a bit farther from the floor level, has already been referred to.

BLUE JAY

(*Cyanocitta cristata cristata*)

The Blue Jay, about eleven and three quarters inches in length, is probably the most beautiful of the birds frequently seen by us in the woodland and in the open. His coat a soft tint of blue, is draped with wings of bright blue marked with black bars and white patches; the tail being of the same color with black bars running crosswise, the ends liberally tipped with white. The crest, which at times is erect, is blue; the under parts a rather grayish white, and the bill black, a black stripe running from the back of the head and under the white throat producing a very striking necklace effect. He is certainly very handsome in his beautiful dress, erect carriage and strong aggressive manner of moving about, and is easily, in appearance, the Beau Brummel of Avian Society. The female is equally attractive to the eye, both sexes being colored alike.

The Blue Jay may be found in pretty much all

of the Eastern United States, occasionally being seen west of that section, and as far north as Canada. A wanderer he might properly be called, for though all of the species do not yearly join in the general exodus to the South, some proportion of them do seek a warmer climate, wandering quite a distance from their breeding station, probably in search of a better food supply; the larger number however, appearing to remain north during the year.

They mate in May, making their nests of twigs and roots, apparently showing a preference for ever-green trees in which they build about ten or fifteen feet from the ground. The eggs, from four to six in number, are colored a light greenish tint, spotted with cinnamon brown.

Whether justly or not, the Blue Jay's reputation especially during the nesting season is bad, almost every offense being charged against him from the moral turpitude involved in ridiculing his winged neighbors by means of sarcastic utterances, to the more tangible crimes of destroying the eggs of the other birds and eating their young. They may be guilty of some nest robbing though I have never observed any of it, but I am inclined to think they are charged with a great deal unfairly, and without good cause. At least ten or fifteen of these birds have summered on our place within five hundred

feet of a dozen nests located in shrub, bush, tree, vine and on the ground, all of which nests were closely watched, and I have yet to see the first bit of evidence of any interference with any of these nests on the part of the Jays, though I have been looking for it for years. Regarding singing qualifications, to say that he makes a noise would appear an accurate statement. Noisy enough he may be, but with the exception of his off repeated call of "Jay Jay" and his rather infrequent imitations of the calls of others, he seldom attempts to inflict anything like a song upon those within the sound of his voice.

Hazel nuts, beechnuts, chestnuts and acorns here form his principal vegetable food supply, and the amount of animal food in the way of insects eaten, though small in comparison with that consumed by some other birds, is still very considerable. In an elaborate experiment an examination of five hundred and thirty stomachs collected at all times of the year in thirty of our Eastern States and Canada, shows that insects comprised twenty-two per cent of the whole amount eaten, three-fourths of these insects being destructive. Investigations intended to verify or disprove the general belief in the egg destroying and young eating habits of the Jay failed to prove anything very discreditable against him though some slight trace of such action on his part was present.

His practice of feeding on hibernating insects and on grasshoppers, to say nothing of the weevils and beetles of many kinds, gives him some economic value which may fairly be credited to him in case the charges of bird slaughter against him are considered proven.

As a part of the bird colony spending six months of the year with us and at times remaining through the winter, I have found the Blue Jay a most interesting study. On the ground in April with the Chipping Sparrow and Robin, he was much in the open and visited the fountain and baths daily. Nesting season found him busy nest building, selecting in one case a spruce tree about fifteen feet from the house, and building about ten feet from the ground. We had no difficulty in watching it and because of its nearness and its adaptability for observation, it was one of which a record was made, and one of those already referred to by me in quoting two or three entries in the season's record.

In this nest built of paper, feathers, twigs and roots, five eggs were laid, the period of incubation was twelve days, and the young were on the nest nine days. All eggs hatched. While the young were still on the nest the food box of moistened bread was freely visited by the parent birds who took their turn with the others. No jostling or rough tactics



BOBOLINK

UPPER FIGURE, MALE: LOWER FIGURE, FEMALE

Order—PASSERES

Family—ICTERIDÆ

Genus—DOLICHONYX

Species—ORYZIVORUS

National Association of Audubon Societies

on their part particularly were visible, the smaller birds giving way to the Jays on their approach, but occasionally a Robin and a Brown Thrasher would stand their ground on the box, the Jay in some cases being obliged to await his turn, and even forced by either the Robin or the Thrasher to take to the tree. There was always the usual timidity and shyness that at first precluded near approach, but later the Blue Jays came with the rest and would come within a few feet of me with apparent confidence. Any house noise however, would alarm them and away they would fly. They sat in during my morning sessions many times and would perch in the big tree until I joined the few more familiar neighbors who awaited me on or near the chair, when they would come down and join us in the corn bread breakfast.

The dimensions of the nest under observation and which has been referred to are:

Diameter at the top, outside, 7 inches.

Diameter at the top, inside, $5\frac{1}{2}$ inches.

Depth in center $1\frac{1}{4}$ inches. Nest shallow with very little dip or slant.

BOBOLINK

(*Dolichonyx oryzivorus*)

The Bobolink as we know him, is about seven and one quarter inches in length, with a range and

breeding territory from New Jersey north to Manitoba, and as far west as the Rocky Mountains. In the vicinity of New York the male arrives about the first of May, preceding the female by about a week, and leaving in July on his journey South. Not all leave as early as this however, and occasionally a tardy one is observed through the month of September when he too takes his leave for South America, his winter home.

In early Summer the garb of the male is head, wings and tail black; yellow patch on nape of neck; rump and shoulders white; under parts black. In Autumn and in Winter the upper parts are brown and buff, and the underparts very light yellow, these being also the colors of the female. The change of plumage of the male takes place during July and August.

Grass is used in the construction of a nest which is placed upon the ground; from five to six eggs of white, spotted with brown, constituting a full set.

Whether as the Reed Bird of the Middle States, or the Rice Bird of regions farther South, our friend, in his Autumn and Winter garb, is equally well known, formerly unfavorably known because of the amount of grain he was supposed to destroy or eat. Stomach analysis, however, has disposed of the gravity of the former charge and the changes in districts given over



BOB-WHITE

Order—GALLINÆ
Genus—COLINUS

Family—ODONTOPHORIDÆ
Species—VIRGINIANUS

National Association of Audubon Societies

to the cultivation of rice have done away with the latter. The fact is his diet while with us, consists of insects which are destructive, and seeds of plants of no possible use, so his food habits are on the whole, to be commended. He is rather a tourist in his travels, his long trip of thousands of miles from his nest here to his winter home being punctuated by stops in the Southern States, and in countries farther south.

The song of the Bobolink is his greatest attraction in my mind. It is a combination of happy sounds, suggestive of a light heart and hospitable disposition, notwithstanding which I have never observed any desire on his part to be friendly or companionable so far as the society of humans is concerned. A male of the species frequently spent several minutes at a time on the end of a dead limb on one of our oak trees in June before discarding his Spring suit, which created the impression in my mind that the female was not far off and that their nest was somewhere on the place, but he was never joined by his mate nor did we ever see either her or the nest.

BOB-WHITE

(*Colinus virginianus virginianus*)

Bob-white is a Game bird entitled to register from most of the United States. He is about ten inches in

length, no longer than the Robin, though he answers to more names than the red breast, being known in the South as the Partridge, hunted in the North as Quail and recognized pretty much all over the country as Bob-white, perhaps being found more numerous in the Eastern section than elsewhere. The upper parts of the male are marked with mottled brown and black, while the under parts are yellow or buff with black markings. The throat is white, below which is a dark band, and a white line extends over and beyond the eye. The slight difference between the coloration of the sexes consists in the absence in the female of the white throat and the eye line. The dark band below the throat too is missing or is scarcely distinguishable. The male is larger than the female. He winters where he summers as a rule, being known as rather an all year around resident of whatever locality he chooses for his home though it is said he sometimes leaves the North for a point nearer the Southern belt. It does not sound like him however, for he frequently sleeps in the snow in the winter, and always on the ground, regardless of weather conditions. With the other birds, he mates about the middle of May, building his nest, composed of grass and leaves, on the ground under the shadow of a friendly bush or decayed stump where he very effectively screens himself from view with

the same kind of material as that used in nest building.

The eggs, numbering from eight to eighteen according to the best authorities, are white, rather more pointed at one end than are those of many other birds. Often a second brood is reared. The period of incubation is twenty-four days instead of the ten or twelve days of the other smaller birds, at the end of which time a very finished article is turned out for the young almost at once leaves the nest and run about with the mother bird in her search for food. As a rule the bird keeps pretty well under cover though giving little evidence of being shy, his protective coloring no doubt supplying him with more than the usual amount of confidence. His fascinating whistle introduces him to our attention and, of pleasing appearance and rather friendly manner, he creates altogether a very favorable impression.

He feeds on the ground, three-fourths of his food supply consisting of grain obtained from stubble, and from weed seeds, doing what he can to help the farmer by varying this diet with an assortment of insect life and weed life, which constitute such a menace to the farming interests. Assistant Biologist F. E. L. Beal in Farmers' Bulletin issued by the Bureau of Biological Survey, furnishes much valuable

information on the subject of insect food, and my figures, here given, as are some of those quoted by me in connection with the insect eating habits of the other birds, are taken from his very interesting articles.

In addition to the nuts, pine seeds, wild berries, grapes and acorns, which help satisfy the appetite of Bob-white, and to the weed seeds, about thirty-six per cent of the food supply during the three Summer months of June, July and August, when worms, caterpillars, and bugs seem most plentiful, is made up of bean leaf, potato, cucumber and May beetles, wire worms, squash lady bugs, corn bill bugs, clover leaf and cotton boll weevils, army worms, cut worms, bullworms and chinch bugs, all destructive insects. Among the weed seed eaten, are included all of the worst weed pests with which the farmer has to contend. As has been stated, he does not as a rule migrate and remains where he breeds.

For the last year or two my opportunities for observing our cheery little friend have been few. Formerly it was no unusual sight to see a dozen or more about the grounds, but gradually their numbers have decreased until last year not one family were either heard or seen, the birds having been hunted in and out of season and destroyed. Only one nest has it

ever been my fortune to watch, and though within a hundred and fifty feet from the house, it was built and nesting well under way before we knew it was there. Fourteen white eggs finally appeared in the nest and eleven youngsters were the product of Mrs. Bob's twenty-four days of patient, if not watchful, waiting. What became of the other three eggs I do not know as no trace of them was ever found. They were husky youngsters and she took them out by details, four or five at a time, walking them across the open and past the house as if explaining where her folk lived. Friendly they were in the Spring, and would come around to see whether we had any cracked acorns, beechnuts, or sassafras berries, coming within a few feet of the chair upon which I was sitting. Later they were occasional attendants at my morning class, though never occupying seats very far front. They are among the few birds that never feed from the foodbox. Their song is a whistle, sometimes two notes and sometimes three. Aside from the economic feature presented, I cannot see why such a large proportion of hunters should aid in suppressing their cheery little note of salutation of late years. They do these things better in the South in some respects where game preserves are being established, and the bird given a chance.

INDIGO BUNTING

(Passerina cyanea)

The Indigo Bunting measures about five and one half inches in length and may be found from the Southern States north to Canada, breeding within the same section.

The male is colored a rich indigo blue, the wings and tail being darkly shaded; while the female is garbed very modestly in brown dress, with tail of faint bluish tint.

About the first of May he appears in New York and vicinity, spending the summer here and leaving during the first part of October for Central America, his winter home.

2 In bush or shrub and not far from the ground, a foundation is found for the grass with which a nest is slovenly built, little time or care being apparently given to its construction. From three to five eggs, white, constitute the number laid.

The food value of the bird is perhaps not as impressive as his beautifully colored dress, his principal article of food consisting of seeds including those of many weeds. He is not altogether neglectful however, of the insect population, and if other birds had not established remarkable records in this direction, he would be thought a help economically



INDIGO BUNTING

(UPPER FIGURE, MALE; LOWER FIGURE, FEMALE)

Order—PASSERES
Genus—PASSERINA

Family—FRINGILLIDÆ
Species—CYANEA

for to his vegetable diet he adds a varied assortment of caterpillars, bugs and grasshoppers.

The Indigo Bunting has a song and is not afraid to sing it, and if it is not as sweet in tone as the notes we sometimes hear, he certainly is not stingy or sparing of it and we hear him from the time of his arrival in May until he departs in the Autumn. His preference for thick bush and vines and his disinclination to spend much of his time in the open except where the open is rather closely surrounded by wooded land, prevent his being seen near the house as often as one would wish, and the female appears to be of even a more retiring disposition.

CARDINAL

(*Cardinalis cardinalis cardinalis*)

The Cardinal measures about eight and one quarter inches in length. He breeds in the United States south of the middle section, and is most often found in the Southern States. The male is as conspicuously colored as any bird, his face, enclosed within a frame of black, and his beak, marked with a white line, being the only portions of his body not a bright red. The female is an olive brown, with top of head, beak, wings, and tail of slightly reddish tint. A raised crest in the case of both sexes gives the face, particularly that of the male, an appearance of unusual length.

He nests when in the vicinity of New York, about the first week in May, selecting for his location a bush, thicket, or vine, where, not over three or four feet from the ground level, and in a structure built of twigs with or without leaves, from three to four eggs may be found. These are a blue of greenish tint, decorated with brown spots. The song resembles in some instances, a warble and consists of several notes at first uttered slowly and lazily and then quickly and rapidly. A single sharp note constitutes the call.

While the food habits of the bird place him in the list of vegetarians, fully two-thirds of his food supply consisting of berries, weed seeds, etc., he shows a distinct liking for insects, the other third of the stomach contents being made up of bullworms, weevils, beetles, cotton worms, codling moths and a variety of bugs and other insects. Altogether he is of great help in the fight against these predatory insects and must be considered, in this respect, a valuable asset. The Cardinal, if for no other reason than because of his spectacular plumage, makes a most desirable neighbor, and his habits and conduct so far as either affect us, present no features of an objectionable nature. This does not mean that we see very much of him even if he selects a nearby home, as his visits in the open in the vicinity of the



CARDINAL

Order—PASSERES

Family—FRINGILLIDÆ

Genus—CARDINALIS

Species—CARDINALIS

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house are not of long enough duration to permit of much intimacy. We have had him visit our drinking cups, but not often, and during the past two years we have not had one on the place. It would seem that fewer nest in the vicinity of New York than formerly, and notwithstanding that some of the species appear hardy and spend the winters above the frost line, the vast majority show a preference for the climate of the Southern States and I have seen in a day in the State of Florida when not looking for them, more Cardinals than it has been my good fortune to see in years when seeking them, in New York State. My opinion is they may be listed as "rare" in the vicinity of New York City.

CATBIRD

(*Dumetella carolinensis*)

About nine inches in length, body of slate color, running into black at the top of the head and on the tail, with dark red under the tail, symmetrical in contour and exceptionally well groomed, the Catbird is a beautiful addition to any bird colony. He breeds in nearly every part of the Atlantic States and in Southern Canada as well; spending his Summers in the North and his Winters in the sunshine of the Southern climate. When mating season arrives, the male helps build the nest, which is usually located in

thicket, brush, or tangle of vine and branches, and is composed of leaves, twigs and stems with root lining, and when the eggs arrive, of which there are from three to five, generally four, and which are of a deep blue color, he flies about singing his song while his mate is on the nest awaiting developments. Both the male and female are marked alike, but we frequently see the two birds in the immediate vicinity of the nest and so assume they both are doing their share of nest building and hatching. Though generally building in the woods or thicket where branch and foliage are thick, he spends much of his time in the open, being of an exceedingly inquisitive nature and wanting to see what is going on about the house and grounds. He sings beautifully, interspersing his songs, and his very clever imitations of the songs of other birds, with his cat call at frequent intervals.

His appetite for fruit has damaged his reputation among fruit growers and owners of gardens somewhat, but on the whole he is not such an enemy of the grower as some would make it appear. On an examination and analysis of the stomachs of six hundred and forty-five Catbirds by the Government Bureau, it was found that forty-four per cent of the stomach contents was animal or insect food and the remaining fifty-six per cent of vegetable food; only one-third of this fifty-six per cent being made



CATBIRD

Order—PASSERES
Genus—DUMETELLA

Family—MIMIDÆ
Species—CAROLINENSIS

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up of cultivated fruit. If we deduct from this one-third of fifty-six per cent the proportion of fruit which we may fairly assume is accounted for by the wild cherries, berries, and grapes eaten, the record is not so bad after all. Bear in mind that a choice assortment of caterpillars, grasshoppers, ants and beetles constituted three-fourths of the animal food eaten, the balance being made up of bugs, spiders and miscellaneous insects. I cannot understand why at least one of the leading authorities should be quoted to the effect that the good accomplished by the destruction of insects probably would not pay for the fruit stolen by this bird.

The Catbird was one of those rarely missing during my morning sessions that have been alluded to, in fact he was generally the first to show up, due very likely to his fear that he might miss something were he not there as early as the others. A quick mover, almost nervous appearing in his constant change of position and movement of the tail, he generally fared well in occasional scrambles for preference, and after satisfying himself that he was in safe company, became very friendly. At class meetings and on the porch he would approach to within a foot or so of my chair, apparently with confidence, and would follow me on my walk when he knew there was anything in the tin box. Four families were with us

last year, and while the young were getting their feathers, the foodboxes were kept busy furnishing the parent bird with food for the nest. One nest under observation was located in an alder bush about eight feet from the open and when we first saw it three eggs had been laid. Both parents were a bit uneasy at our approach and perched on limbs not far off, spluttered a bit, but as we withdrew the female resumed her place. The next day a fourth egg was added to the three already there and the four were hatched twelve days from the day we noticed the appearance of the full set. Nine days later the four young birds left the nest. The nest itself, made of dry leaves and small twigs, supported by larger twigs on the outside, and lined with small roots, was ten inches in diameter measuring from the extreme outside of the large twigs, three and one-half inches in diameter at top of nest proper, the wall one-quarter to one-half an inch in thickness and the depth one and one-half inches.

Another nest the subject of observation was built in a forsythia bush located just off the walk, within six feet of the house and within that distance of a cedar tree containing a Robin's nest, and was placed six feet above the ground. This is just a bit unusual so far as my experience goes as most nests built by this bird are in quieter surroundings and in bush or

tree less noticeable or accessible, but here they built and seemed not a bit disturbed by the occasional slamming of a screen door within a few feet of them, or by the tradesmen passing within a foot of the tree on the way to the house. Both parents were very friendly, coming on the porch when no one appeared on the grounds for some time as if afraid they were missing something, visiting us there for some minutes at times. This couple were seen carrying twigs to the forsythia bush and within a few days the nest was completed, one of the birds taking possession at once. As male and female in addition to being marked alike, appeared to have no distinguishing features either in size, shape, pose, or carriage, it was impossible to know which one was on the nest and therefore whether or not the male took his turn at keeping house, but the opportunities for observation were abundant and it was easily ascertained that the period of incubation was ten days, and that the young were out of the nest on the ninth day. All four eggs were hatched.

A very pleasing companion is the impulsive, energetic and friendly little songster, the absence of which would be greatly missed. A beautiful singer himself, he is extremely clever in his imitation of Brown Thrashers, Robins and other birds and I have been amazed to find that the Thrasher's song or the

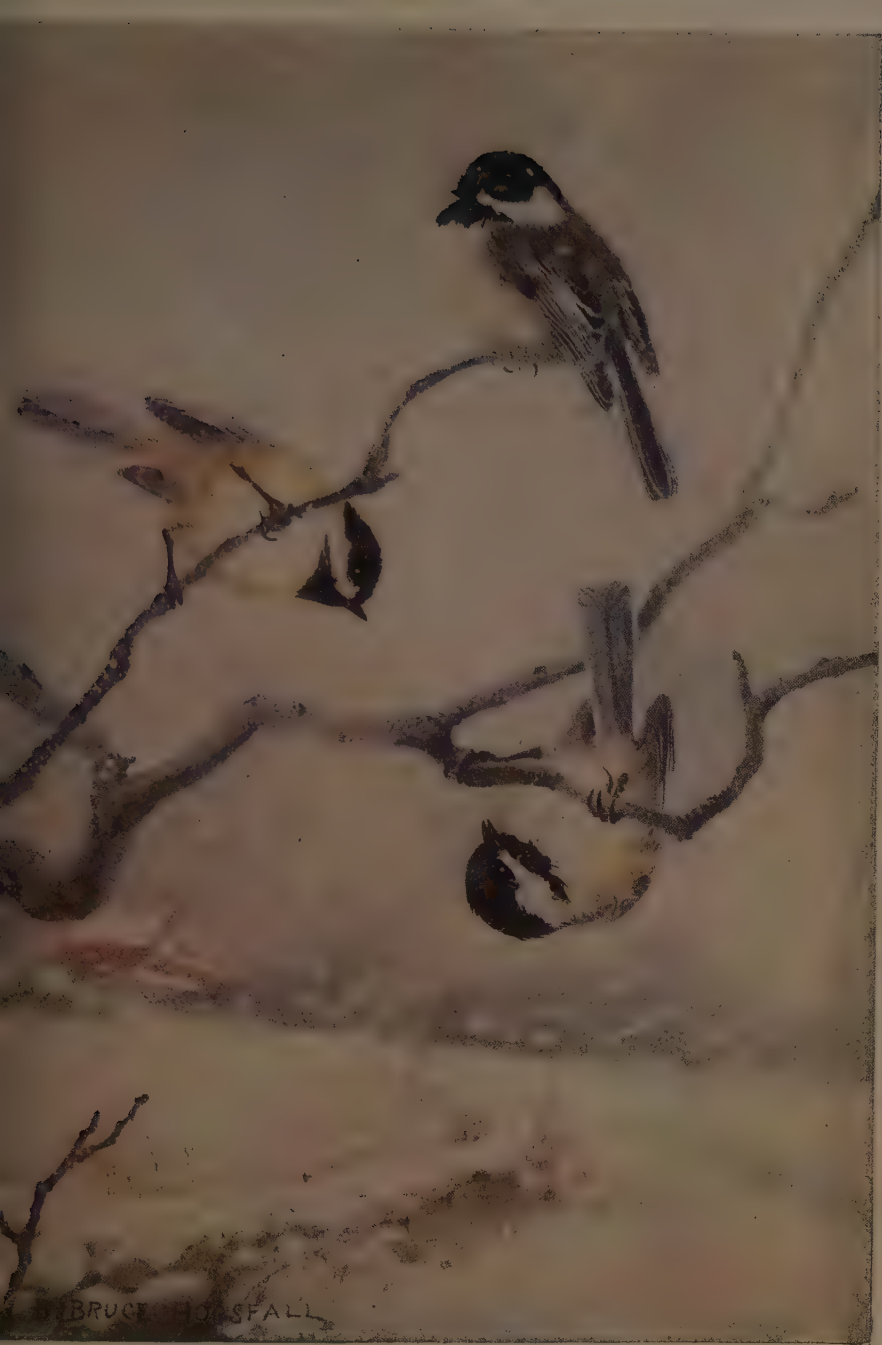
Robin's notes to which I was listening were in reality uttered by our little slate colored Beau Brummel himself who sat on a bush nearby.

CHICKADEE

(*Penthestes atricapillus atricapillus*)

About five and one-quarter inches in length, the Chickadee in some of the positions assumed when hunting tree vermin, looks even smaller. He breeds in Canada and in the North eastern parts of the United States, being found winter and summer in these localities, appearing in larger numbers however, in the winter in the neighborhood of New York and the New England States.

With a back of slate color, tail a darker shade, head a shiny black on top with large white patch on the sides, throat a black and under parts light, he looks, in a snow storm, very appropriately garbed. He mates in May with most of the other birds, selecting for a nest site as does the Woodpecker family a convenient tree cavity or knot hole, where he assembles an assortment of moss, feathers, bark, cotton and the like. It is not possible for him to excavate a hole large enough or deep enough in any live or undecayed wood, and he is not above preempting a convenient tree cavity discarded by another bird.



CHICKADEE

Order—PASSERES
Genus—PENTHESTES

Family—PARIDÆ
Species—ATRICAPILLUS

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From five to eight eggs are laid, white with brown spots near one end. Two broods are sometimes raised in the one season.

Sixty-eight per cent of the food eaten consists of insects, the animal substance including plant lice and their eggs, worms, bugs, ants, fleas, lice that destroy the bark of trees, beetles, moths, including the Gipsy variety, caterpillars and spiders, not a bad assortment viewed economically. The remaining thirty-two per cent of food consumed is vegetable matter, made up of weeds and seeds, the seeds of the pine being especially favored, and in the summer wild fruit is added to the diet.

The Chickadee, while spending much of his time beyond the seclusion and quiet of the woods, and seeming very neighborly around the grounds, is not always as trustful as some of his biographers would indicate, though my experience with him has been in the summer only and not in the winter. Many times have I heard him in the woods and occasionally seen him there, but I could not coax him to mingle with the other birds in the open and he never would join our morning sessions. Perhaps in the winter season when no convenient supply of insect food is available my experience might be very different. We had but one family on the place last year that ever "came around" and they lived in an old Wood-

peckers' nest that had been occupied the year before. The tree had fallen and had been cut in lengths, one of the pieces containing the hole made by the Woodpeckers. This log I stood on one end, leaning it against a tree for support, with the hole nearest the upper end, and not over four feet from the ground level, placing it there on the chance that possibly it might be made use of. In this home in the woods, a few feet from the open, this family lived until the young were old enough to get about, when all hands repaid my thoughtfulness by promptly leaving the woods and neighborhood. It was not practicable to keep any record of their nesting though we afterward knew they had been comfortably situated, for after they had gone, we sawed the log open and found at the bottom of the hole, which was nine inches in depth and one and one-half inches in diameter, a few chips of bark and a half inch of cotton, the latter material being no doubt supplied from the nesting box located on one of our trees.

CHIMNEY SWIFT

(*Chætura pelagica*)

The Chimney Swift, more popularly known as the Chimney Swallow, measures about five and one-half inches in length. He breeds from Quebec and Newfoundland south to the Gulf, arrives in the vicinity



CHIMNEY SWIFT
(*One-half natural size*)

Order—MACROCHIRES
Genus—CHÆTURA

Family—MICROPODIDÆ
Species—PELAGICA

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of New York in the latter part of April, remains here until October and then departs for points south of the United States where he spends the winter. With the exception of the throat, which is light, he is grayish black in color.

Cavities in trees or recesses in rocks form shelters where the nest is built though chimneys are today utilized almost exclusively for this purpose, even in suburban localities where the natural protection is available. The nest is made of small twigs held together by saliva furnished by the bird, and generally assumes the shape of a small half-saucer shaped basket. Four to five white eggs constitute a full set. Two broods are generally raised, the first nesting occurring in May. He is a quick moving, swift flying bird, totally unlike the Swallow in his manner of flight as anyone who has noticed the rapid motion of the wings will appreciate. Economically he is a desirable neighbor, his food supply consisting wholly of insect life, and including flies, gnats, bugs and beetles.

I have never known the Chimney Swift to display any sociable qualities, his rapid flight indicating a lack of time, if not desire, for making new friends. The pair with us two years ago built their nest in the house chimney and when a bit of cold weather made grate fires a comfort if not a necessity, we

discovered a nest in the chimney connecting with the fireplace in the living room, which made it impossible to make a fire there except at the expense of the birds which we could plainly hear. Of course we did not want to kill our new tenants and no fire was made there until the birds had left the nest and the chimney. I never saw them on the ground while on the place, not even for the purpose of patronizing the baths or drinking cups.

BROWN CREEPER

(*Certhia familiaris americana*)

The Brown Creeper measures about five and one half inches in length. He breeds from Canada through the Eastern States as far south as Massachusetts and in the mountains through the Western States. His head, back and tail are dark brown in color, head and back irregularly streaked with white and a lighter shade of brown; brown wings marked with narrow white crossbars; throat white, and breast and belly light. The sharp curved pointed beak and keen sight enable him to seek out and destroy much small animal life; ants, eggs of the smallest insects, bugs, bark lice, plant lice, young caterpillars, and the larvæ of moth in its chrysalis state comprising the greater part of food eaten. Breeding in the North his visits to Long Island and



BROWN CREEPER

Order—PASSERES
Genus—CERTHIA

Family—CERTHIDÆ
Species—AMERICANA

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the vicinity are made in September near the end of the month, and he leaves during the latter part of April. To those therefore, whose observations are confined chiefly to the six months falling between April and October, and to the vicinity of Long Island, the opportunities for studying the Creeper are few.

His coloration, perhaps as nearly ideal as possible for protective purposes, screens him from view pretty effectually and when I have seen him he has been busy on a tree distant a few feet only from me. Even then he was difficult to place. If he stands still long enough and has already been located, the contrast between his color and that of the tree bark is observable, but lose sight of him for a minute or two and it is surprising how difficult it will be again to locate him. Of course he must stand still sometime, but I have never seen him when he was not climbing up a tree pecking at the bark constantly, or dropping from the top of one tree preparatory to making the ascent of another. His only habits so far as my personal observation goes, consist of creeping up trees and jumping down again, for the bird is certainly an energetic and persistent mover. He had no use for drinking or bathing so far as we could see and as he breeds further north has therefore no need of the foodbox provided for nesting birds. While about

the place in April and again in September and in October, he may have, at some time, remained on the ground longer than necessary to enable him to jump up again, but if he did I never observed it. He makes a noise, which can be called neither note nor song, but those who have observed him during the mating and nesting season tell us he has also a short song which is very pleasing.

Twigs, bark, moss and bits of deadwood form the nesting material which is generally placed not high above the ground level, and usually on decayed stump or dead tree. Four eggs, white spotted with brown, comprise the usual number.

CROW

(*Corvus brachyrhynchos brachyrhynchos*)

The Common Crow with which most of us are familiar, too generally known the country over to require any detailed description, is one of three species, the other two groups being pretty well confined in range to localities along the Coasts, rarely making their habitat far from salt water. The bird we know, which the general public calls the Common Crow, but for which the corn growing farmer has other names, is a large husky looking specimen, with strong legs and beak and long wings, black from head to foot and measuring about nineteen inches in



CROW

Order—PASSERES
Genus—CORVUS

Family—CORVIDÆ
Species—BRACHYRHYNCHOS

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length. He is found in all parts of the United States as in some parts of Canada, wintering most anywhere north or south, scarcely coming under the head of migratory birds as his changes of base involve practically short distances and are evidently made in search of food and not caused by any desire for warm or tropical climate. Winter and summer look alike to him so long as the food supply holds out. In Autumn when the cold weather approaches and the supply is less plentiful the word doubtless goes out that better picking may be found elsewhere, and the crows flock in large numbers to points from which excursions may be made to more fruitful fields. These gatherings or roosts in the latitude of Washington, D. C., have become well attended by the first of October and by the middle of January there have gathered in a comparatively small area, a large number of these birds.

At some of the roosts they gather in thousands, arriving one day and leaving the next for feeding grounds which they have evidently located, so if they are not considered migratory in the sense ascribed to the movements of other birds, they certainly travel much even though the distances are comparatively moderate.

The Crow, who raises but one brood, mates a bit earlier than do the other birds and in April has built

a nest at a considerable height from the ground, generally placed at the top of a tall tree, the taller the better, out of reach as well as out of sight of the average observer or intruder. Good sized twigs, sticks, pliable bark, and at times bits of moss comprise the material used, the whole being supported by the natural formation of the branches, and forming a firm substantial base. Here from three to seven eggs are laid, their color being a bluish green liberally mottled with brown. When the young leave the nest they appear to do for themselves, seemingly preferring to travel in company with others of their kind and seldom going about alone.

So general is the impression that the Crow has cultivated but one habit, viz.; that of eating, and that the one article of diet indulged in is the corn of the farmer, his doings except in connection with that practice, attract little notice. The fact is that he is omnivorous but has paid so much attention to the corn field, that he is considered a menace to the successful gathering of grain crops and has earned the enmity of those engaged in raising this product. Various means have been adopted to protect crops against his depredations such as the use of nets, traps, poison, scare devices and the like, the treatment of the seed grain by an application of coal tar, red lead, or other deterrent proving the most suc-

cessful; however, no preventive measures have as yet produced satisfactory results though they have apparently been of some help. The charge of robbing the nests of other birds and destroying the eggs has also been made against this bird and appears to be, to some slight extent, verified. Let us see what can be said in his behalf in reply to these charges. The best evidence in support of a plea of not guilty would be the testimony of the bird himself, but as he cannot express himself in language understood by us, we must rely upon the testimony of witnesses skilled in their professions and of acknowledged reputation and this we have in the reports of official analyses of stomach contents made under the direction of the United States Department of Agriculture. E. R. Kalmbach, Assistant Biologist treats interestingly of the Crow in its relation to agriculture in one of the Farmers' Bulletins issued by the Department. An examination of over twenty-one hundred stomachs, of which thirteen hundred and forty were of adult Crows collected in forty States, in the District of Columbia and in a few Canadian Provinces, has shown that about nineteen per cent of the food consumed yearly consists of insects, most of which are of a destructive nature, and including May beetles, white grubs, grasshoppers, caterpillars, weevils and wire worms; thirty-eight per cent corn; thirteen per

cent other grain; three per cent weed seeds and rubbish; three per cent carrion; and seven per cent animal matter of a miscellaneous character. So far as the charge of destroying corn is concerned the thirty-eight per cent consumed is formidable, but in November, December and January when corn forms over one half the diet, most of this must have been obtained from unharvested ears, which costs the farmer nothing for there would seem to be no other source of supply at this time. Any argument intended to offset the loss that no doubt is caused by pulling corn, must be based upon the bird's usefulness in destroying noxious insects and here he helps out considerably as this food forms one-fifth of his diet, and includes some of the most destructive pests to which the farmer pays heavy toll. It is just possible that the worms eaten by the Crow would destroy more corn, if not interfered with, than the bird is charged with stealing. The charge of destroying nests and the eggs of other birds is sustained to some extent, the examination of the stomachs of some eleven hundred Crows showing that fifty of the eleven hundred had fed on wild birds or their eggs, still this is not a large percentage and so far as the eggs are concerned, deserted nests and garbage heaps which are picked over, may, and no doubt do, account for many of these.

After all, the bird is a menace and also a help. The owner of grain fields is justified from his point of view in killing him and those who engage in other pursuits may feel like being lenient with him because of his insect destroying habits; at any rate the only thing to do apparently is to attempt to circumvent these predatory raids by resource to scientific methods and this is being done. He will not be lured into traps or nets and if he could be shot to death, he would have been dead long ago. The destruction of the nests and young would in time exterminate the species, but this is equally impracticable.

The Crow is strangely inquisitive and always distrustful. We have many about the place, but as a rule they fly high and seldom light on the ground when anyone is within a reasonable distance. A nest is located in the top of one of our tall pine trees, but the tree which stands on the edge of a bank easily sixty feet above the shore front leans out over the bank making the nest of no value for purposes of securing nesting information, though its contour and the presence of the parent bird, are seen with the glass. I know they are inquisitive, for they have taken turns in watching me from a nearby pine, and as long as I remain quiet they appear in no wise afraid of me, but when I move they follow suit. This is as near a wild Crow as I have been able to

get. They fly over the place in small numbers and frequently light on the pines for awhile, but appear to have no interest in our doings, ignoring our supply of fresh water and in nesting season, our feed box. Many nests of other birds are about us, but, so far as I know have not been disturbed by them. The only picture of a Crow that I have been able to take is that of one raised in captivity and owned by one of the residents of the town. The opportunity offering itself for photographing found the bird outlined against a background of dense foliage and it would have been necessary to have the negative blocked out in order to get a plain outline of the bird.

MOURNING DOVE

(*Zenaidura macroura carolinensis*)

The Mourning Dove measures about one foot in length though the long neck and tail give the appearance of greater size.

He breeds in all of the States, also in southern Canada and in Mexico, arriving in the vicinity of New York in March and staying with us pretty well through October. He winters south of the United States. His upper parts are light brown marked with darker brown or black patches, head and neck gray and pink with a small dark patch on the side of neck; throat and under parts pinkish and undertail feathers



MOURNING DOVE

Order—COLUMBÆ

Family—COLUMBIDÆ

Genus—ZENAIDURA

Species—MACROURA CAROLINENSIS

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edged with white. The legs and feet are a deep pink, almost a red, and with the distinctive patch on the neck, identification is easy.

Usually the nest is not a very substantial structure, if in fact it can be called a structure at all, a few twigs laid upon the limb of a tree or upon a convenient log or post near the ground without any apparent attempt at lacing or strengthening, being all that is provided. Two eggs, white, appear to be the usual number laid, even two, when hatched, taxing the stability of the loosely laid twigs.

Though no insects or animal substance are included in the food diet of this bird, his economic value is considerable for the vegetable matter comprising practically the only food eaten, consists of seeds of plants, the grain forming a part of this no doubt being gathered after harvest time and of no value to anyone, and weed seeds, the latter of no possible use and most of them noxious and destructive to the farmers.

His habits might be considered quiet and retiring for seldom does he seem to have neighbors in the nesting season, and when the summer is over and the time for leaving for the South arrives, instead of gathering with others of his kind and making the trip in company, he and mate, with the young if any, pull out without notice to anyone and quietly make

the journey at their own time and in their own way.

The first time the Mourning Dove summered with us I remember well noting the rather plaintive and mournful note and watching the pair as they proceeded leisurely past the house and across the open space evidently looking for seeds as they went. When they located in the nearby woods we had great hopes of getting well acquainted, but while they seemed not afraid, for they would come within fifty feet of us, or rather they would permit us to get within that distance of them, the intimacy stopped there and we saw little or nothing of them. They did not visit our baths or drinking cups, and after the young were hatched out must have moved on as the sad sounding note of the male was not again heard on the place.

NORTHERN FLICKER

(*Colaptes auratus luteus*)

The Flicker has many points of distinction. As the largest of the Woodpecker family on Long Island he measures about twelve inches in length and as he is built in proportion, his size alone would attract attention. Then as befits a bird of his dimensions, he has in addition to the scientific appellation of "*Colaptes auratus*," some thirty-four or thirty-five other names, more than he really needs, being best



FLICKER

Order—PICI

Genus—COLAPTES

Family—PICIDÆ

Species—AURATUS

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known in this section perhaps as the Highholder and Yellowhammer.

His garb is striking and conspicuous. The back and wings are brown marked with broken bars of black, the under surface of the wings and the under surface of tail being yellow. The head and neck are a grayish blue with a red patch just below the crown, throat pinkish with black patch on each side and black crescent shaped band underneath. The under parts are light spotted with brown, and rump white. The description sounds like an old fashioned patchwork quilt, but if you will put your glass on the bird you will find the markings are all there. The female is similarly marked except that it has no black patch on the sides of the throat. He breeds in the Eastern States and some parts of the West and in Canada, and may be found in the winter in the Eastern and Southern States.

His nest is generally a cavity made by himself in a decayed tree or log, and the eggs, of which four to nine constitute a full set, are a clear white. He will also avail himself of a nesting box where one to his liking is more available than the materials for his first choice. He is found in the open as well as on the edge of the woods, and covers quite a bit of ground in satisfying his appetite for ants and bugs, but while he will take a look around and about the

house occasionally, his disposition is not over trustful and may properly be classed as shy. His calls are of a varied assortment, but if anything like a song is indulged in that fact has never been generally observed.

The food habits of the bird are commendable from a useful point of view, and while ants are considered an especially delectable dish, bugs and wood boring grubs are also included in the diet. It is astonishing how many ants can be eaten in a day, a test examination showing two stomachs entirely filled with these insects, more than three thousand ants being found in each of the two, and a third stomach contained five thousand. As these insects are destructive, the usefulness of our many colored friend is quite evident. I never felt that the Flicker was one of our sociable birds though he indicated in some ways his desire to be near us. One located in an old decayed tree on the edge of the woods, and another of the family occupied an improvised shelter box on a neighboring tree, hunted for ants pretty much all over the open space about the house, and on several occasions visited the foodbox, though it appeared that even there he was eating the ground ants drawn there by the presence of food. He never joined our morning class however, and except as above stated, seemed to court no further intimacy.



GOLDFINCH

Order—PASSERES

Family—FRINGILLIDÆ

Genus—ASTRAGALINUS

Species—TRISTIS

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This same nest in the tree cavity was occupied two years ago by a Flicker and though I believe these birds prefer to seek a new place for nesting purposes, the cavity was cleaned out as thoroughly as possible and last year a Flicker was again in possession; whether or not he is the tenant of two years ago is not known. The hole in the tree serving as an entrance to the cavity is a bit larger than two and one-half inches at the edge where it had evidently decayed since being bored, and the diameter of the tree is eight and one-quarter inches. No reliable data in connection with the brood raised here, or in the shelter box is available, except that no unhatched eggs were found in either case when the nests were vacated, and but five young were accounted for in the one case and six in the other.

GOLDFINCH

(*Astragalinus tristis atristis*)

The American Goldfinch, one of our permanent population, measures slightly more than five inches in length, ranging as he breeds, in Canada and South through most of the United States. There is no mistaking the male bird in the summer for with the exception of the crown of the head, wings and tail, which are black, the upper and lower parts are

a bright yellow. The upper parts of the female are olive brown; the under parts light yellowish, and these are also the colors of the male in winter as he discards his bright garb at the close of the summer moult and from then until April of the following year wears the modest dress of his mate.

When ready to breed in June, a nest is built of bits of bark, small roots and grass to which a lining of plant down, wool or some soft substance is usually added, which is placed in a bush or tree five feet or more from the ground, some of them in fact being placed at a height of twenty or twenty-five feet. A full set of eggs numbers from three to six and are white with bluish tint.

His food habits are those of a seed eater, weed seed and seeds of pretty much all sorts forming a good part of the diet, particular attention seemingly being given to the Sunflower and Dandelion. Insects are not neglected altogether, however, and grubs, worms, bugs, plant lice and beetles contribute to the general food supply.

So much of a singer is he that he has been likened to our Canary in song, and he is no doubt a beautiful singer, but I have never in the notes of the Canary heard anything plaintive, and some of the notes of this bird are sad.

The Goldfinch is not only frequently seen, but he



BRONZE & PURPLE GRACKLES

Order—PASSERES

Family—ICTERIDÆ

Genus—QUISCALUS

Species—ÆNEUS & QUISCULA

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seems a friendly and sociable sort of bird and is not always rushing about like some of the others. He visits localities in company of his own kind and I have often seen him visiting the Sunflower and Dandelion patches accompanied by a group of the bird friends.

PURPLE GRACKLE

(*Quiscalus quiscula quiscula*)

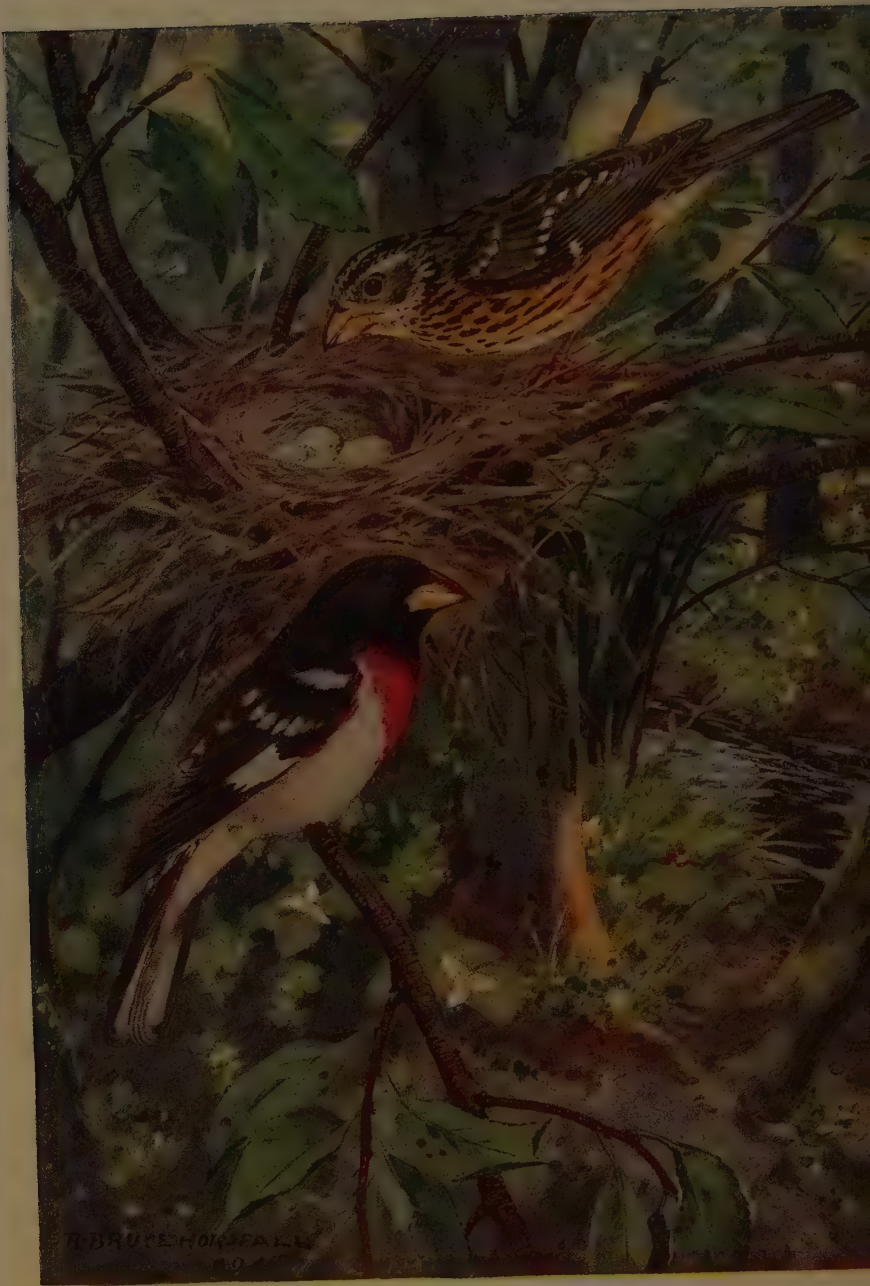
The Purple Grackle, or Crow blackbird as he is otherwise known, measures about one foot in length. He breeds in Southern Canada and in the eastern part of the United States wintering in the Southern States. He comes to us in March, nests in April, and remains with us until November. The upper parts of the male are a lustrous black, tinted purple and green about the head, neck and breast, the under parts being of a more negative tint. The eye is yellow. A bit smaller in size than the male, the female is garbed a bit duller in shade and presents an appearance less attractive.

As a rule nests are located in trees at some height from the ground, a site twenty-five feet or more above the ground level being frequently selected, though this is not always the case, a bush sometimes being chosen, and I have known one pair to build a nest on what seemed to be the top of an old Flicker

nest on a limb not more than ten feet from the ground. Sticks and twigs constitute the materials used. From three to five eggs are generally laid, their color being a green of bluish tint, marked with dark brown spots.

Neither the song nor the call are pleasing to the ear, both being a sort of whistle, the former consisting of two or three notes or one long note and the latter a single short note.

The economic value of the bird while not great is not altogether a negligible quantity as his Spring and Summer bill of fare embraces grasshoppers, weevils, white grubs, and caterpillars, cut worms and army worms being included in the latter group. They at times, do great damage to grain crops and in the winter waste grain and seed form the chief article of diet. The Grackle comes to us, however, with a bad reputation, being charged with the destruction of nests, and young birds. That they will destroy nests I have had ocular proof. They certainly appear troublesome if not vicious and the smaller birds seem alarmed at their appearance. The colony idea is featured by them as they flock together in small numbers, while at their nesting home, and when ready to migrate, make the journey in large numbers. I have never known them to rear more than one brood.



ROSE-BREADED GROSBEAK

(UPPER FIGURE, FEMALE; LOWER FIGURE, MALE)

Order—PASSERES
Genus—ZAMELODIA

Family—FRINGILLIDÆ
Species—LUDOVICIANA

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ROSE-BREASTED GROSBEAK

(Zamelodia ludoviciana)

The Rose-breasted Grosbeak measures fully eight inches in length. He breeds in Eastern United States north of New Jersey as far as Southern Canada; appears in the vicinity of New York the first or second week in May; remains here until well into September, and then leaves for South America where the winter months are spent. The male is conspicuously marked with black head, throat and back; yellow beak; white rump; rose or reddish breast, and white belly. The upper parts of the female are brown, under parts buff, with brown spots. The nest, built by the middle of May usually in young trees, and not far from the ground, contains from three to five eggs, blue with brown spots, in color. The nest structure seems to answer the purpose for which it is intended though the twigs and sticks composing it are loosely placed, apparently not strong enough to hold together.

The food habits of the bird make it a desirable neighbor, chinch bugs, brown tail moths, army worms, caterpillars, Gipsy moths, canker worms, beetles and locusts contributing generously to the amount of food consumed. It is doubtful if any of the insectivorous birds are of more economic value

than this strikingly colored songster. He sings, as he eats, persistently, and to a purpose for his song is most musical and has been compared to that of the Robin.

The male Grosbeak challenges attention by his striking garb, and holds it with the charming notes he so frequently utters, but that is about all the impression he seems to think it necessary to make, for beyond appearing occasionally at the edge of the woods or in the bushes, no further or more intimate acquaintance is made possible by any attempt on his part to visit the neighborhood of the house. Both male and female did, one hot day during the summer, use both baths and drinking cups, but I never knew the visit to be repeated.

RUFFED GROUSE

(*Bonasa umbellus umbellus*)

The Ruffed Grouse, to New Englanders and to those in some of the other states known as the Partridge, and described in the southern part of his range, in wooded tracts, and in the mountains as the Pheasant, measures about seventeen inches in length. One of the best known of game birds, his range is parts of Canada and the United States as far south as and including the middle States.

His coloration is protective, the upper parts of the male being a mottled black and chestnut, throat



RUFFED GROUSE

Order—GALLINÆ

Family—TETRAONIDÆ

Genus—BONASA

Species—UMBELLUS

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yellowish, and under parts of mottled pearl and dark brown or black. His crested head is spotted, the sides of the neck are covered with tufts of long black feathers, and the tail feathers are crossed near the end with a black and white band and are tipped with white. The female markings follow those of the male except that in her case the tufts of feathers are short instead of long.

A permanent resident, his nest when in the vicinity of New York, may be found in the woods, often at the foot of some stump or against some rock or log, during the first part of May, where a resting place of leaves and grass is made. Here the eggs are laid, buff in color, and from six to a dozen or more in number.

Acorns, chestnuts, beechnuts, weed seeds, berries and grapes form a part of the food consumed though an assortment of grasshoppers, weevils, worms and beetles are included in the menu, some of the beetles being of the more noxious variety.

Perhaps his most noticeable characteristic is a drumming sound produced by a quick rapid movement of the wings, a means resorted to it is said, for the purpose of disclosing to the female his presence. Whatever the purpose may be, the effect when heard for the first time is startling and anything but reassuring.

Essentially a forest bird, the Grouse is seldom seen

for any length of time in the open, and in the wooded sections his coloration makes it possible to elude many of those bent upon his destruction. I have known him, however, to be quite unafraid in the northern woods where his confidence or his indifference made him an easy prey of the hunter.

SPARROW HAWK

(*Falco sparverius sparverius*)

The Sparrow Hawk, smallest of the species with which we are familiar, is about ten inches in length. He breeds throughout Canada and the United States, spending the winter south of the middle States. His back is reddish brown with small black patches, wings dull blue, and tail brown with black and white markings on tip. Under parts lighter and crossed with black spots. His head is marked blue and white, and a yellow band running from eye to eye and across the nose gives him the appearance of wearing spectacles. In the female the spots on the under parts are brown. He appears in the neighborhood in March, and in May a nest is made in some tree or log cavity where from three to six eggs are laid, spotted brown in color.

A food diet of beetles, caterpillars, grasshoppers, field mice and even house mice, with an assortment of spiders and small insects, makes him an especially



SPARROW HAWK

Order—RAPTORES
Genus—FALCO

Family—FALCONIDÆ
Species—SPARVERIUS SPARVERIUS

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desirable neighbor from an economic point of view. His cry consists of two or three shrill notes uttered in flight and not pleasing to the ear. When seen in the fields his movements are slow and apparently aimless, but a sudden and rapid swoop as he reaches for some grasshopper or other insect that he has located stamps him as very much alive. Why the Sparrow Hawk should be so named I do not know though it cannot be because of an established habit of carrying off Sparrows that are available. Instances have been reported where an occasional member of the species has raided an occupied nest and appropriated one of the young, presumably for food purposes, but there is no reason for believing that this practice is universal or even pretty general. That the Sparrows sense the presence of the Hawk with a feeling of fear is true, however, for I have seen a dozen or more Chipping and Song Sparrows while feeding on the ground, suddenly stand motionless, apparently transfixed with fear, while a Sparrow Hawk passed slowly and at some little height, over their heads.

RUBY-THROATED HUMMINGBIRD

(*Archilochus colubris*)

The Ruby Hummingbird, smallest of our birds, measures about three and three-quarter inches from

the tip of his long beak to the end of his tail. He is found only in America so far as I know, breeds from Labrador south throughout the United States and probably winters south of that country.

The upper parts of the male bird are bright green, the breast and belly light gray and the throat a ruby red; the colors of the female being in all respects similar excepting that a white throat distinguishes her from her mate. He builds his nest of bits of bark, soft fibre, tree moss and ferns, at times supplementing this with a covering of lichens, locating generally, it would seem, on limbs running horizontally or nearly so, and preferring the birch, cherry or maple tree in the selection of a home. Two eggs, white, constitute the full set. From the frequent visits made by this bird to flowering bushes and plants yielding sweet substance, the impression is pretty general that the "honey" so gathered forms the whole if not the greater part of the food consumed by him, but while the sweetness so extracted does constitute a substantial part of his diet, insects are also included among the objects of his search. Small flies and spiders receive his attention while the visits to flowering bush and vine are frequently made for the purpose of securing the parasite which flourishes there.

No song has this diminutive bird nor has he any distinguishing note, some writers providing him with



RUBY-THROATED HUMMINGBIRD

Order—MACROCHIRES
Genus—ARCHILOCHUS

Family—TROCHILIDÆ
Species—COLUBRIS

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a squeak or other sound which however, is not fully enough described to secure recognition.

About the first of May he arrives in the vicinity of New York and during the second or third week in September starts on his journey in the direction of Central America where it is believed he winters. In his migratory movements he is as rapid a traveler as when darting from bush to vine in search of nectar or insect, for as has been stated, he flies over five hundred miles in a single night in crossing the Gulf of Mexico.

Of course we have all seen Hummingbirds, but I do not know much about them at first hand. I have seen a nest, but have never found one, nor have I ever been able to observe the nesting process closely enough to collect any reliable data of any sort concerning it. The authorities seem to accept fourteen days as the period of incubation. Our place is plentifully supplied with lilac bushes and with honeysuckle vines, both of which are liberally patronized by our diminutive friend, and I once found what may have been a nest in the honeysuckle, only the proverbial horizontal limb was the top bar of a wooden fence thickly covered with foliage, for with the exception of the lichens and soft material which were both absent, it resembled the nest that the bird builds.

SLATE-COLORED JUNCO

(Junco hyemalis hyemalis)

The Slate-colored Junco, known around Thanksgiving and Christmas time as the "Snow bird" is a compact built little body measuring about six and one-quarter inches in length. He is found in the summer in the New England states and in the mountains; winters in all of the Eastern States and as far south as the Gulf of Mexico, and breeds in Alaska, Canada and in the Catskill, Adirondack, and Alleghany mountains. In color his upper parts and breast are slate, belly white, wings slightly marked with white, and outer tail feathers marked with white strip at sides very noticeable when in flight. A light pink bill is rather a distinctive coloration.

For nesting purposes a site on the ground is selected, fairly well screened from view with grass and growth, and here a depression formed by him serves as a nest, from three to five eggs of cream color speckled brown, constituting a full set.

His economical value is of importance, the Government in its examination of more than five hundred stomachs finding a large quantity of noxious weed seeds and insects among its food. Seventy-seven per cent of food consumed was vegetable, and consisted of blackberry and raspberry seeds, with fruit



SLATE-COLORED JUNCO

Order—PASSERES
Genus—JUNCO

Family—FRINGILLIDÆ
Species—HYEMALIS

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pulp, oats, wheat, barley, corn and weed seeds, the latter comprising the principal food item however, and amounting to sixty-one and eight one-hundredths per cent. As the time the fruit was eaten indicated that it was wild fruit and as the grain was taken after harvest time and therefore must have been waste grain, no damage was done to gardens or crops and the weed seeds are all to the credit of the bird. Of the twenty-three per cent animal matter consumed, beetles, weevils, caterpillars, ants, wasps, spiders, bugs and grasshoppers make up the total.

When it comes time for him to migrate he takes the "Night Line" in preference to making the trip by daylight, traveling, as he lives while here, in company. I have never felt as though I knew the Junco, for though he is a friendly little fellow and perfectly willing to come near the house, he does not appear in the vicinity of New York, except in the mountains, until well into September, generally the latter part, and by the first of May he is on his way to the mountains or where he thinks it is cooler or the feeding better. Last year on October first about forty of them made their first appearance on the lawn alongside the house windows at breakfast time, scanning the ground carefully and looking over what was left of the Sunflower seeds on the place. They were an active happy appearing lot, keeping well

together and apparently successful in their search for seeds, which encouraged me in the hope that they would remain with us for a few days at least, but either the crop of seeds was insufficient or they were on the way to some objective point, which is more likely, for they left that night without even taking a drink so far as I could see, and in the morning not one was in evidence. I was glad that so many of them called on us as long as their stay was so brief, for it was a merry little party while it lasted.

KILDEER

(*Oxyechus vociferus vociferus*)

The Kildeer, one of the commonest of our shore birds, measures about ten and one half inches in length. He may be found in Canada and in pretty much all of the United States where he breeds, wintering from the Southern States south to South America. His back is dark gray; head brown, dark gray and white; upper tail feathers reddish brown, lower ones dark brown tipped with white; throat, breast and belly white, two cross bars of dark brown, one encircling the neck and the other crossing the breast; wings dark brown slightly tipped with white.

While he favors the shore front, his nest is built on the ground in field or pasture and is made of grasses.



KILLDEER

Order—LIMICOLÆ

Genus—ÆGIALITIS

Family—CHARADRIIDÆ

Species—VOCIFERA

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Four eggs, white speckled with light brown, constitute a full set.

He is one of our best aids in exterminating destructive insects, as he feeds upon grasshoppers, beetles, flies, bugs, spiders, caterpillars, mosquitoes, worms, centipedes and the snails and small crabs found on the shore.

The Kildeer is perhaps best known by the two syllable cry with which, oft repeated, he punctuates many of his movements. The cry much resembles "Kill-dee" in sound and is frequently uttered. We have him with us on the grounds occasionally as well as on the shore front, and he sometimes approaches quite near with no indication of shyness, but leaves quickly if any move is made in his direction.

One of this species frequently visited the field a few feet from the bank and spent what apparently was his spare time on the dead limb of a tree, but at any attempt to approach him he at once took to the shore and our efforts to locate his nest were not successful.

KINGBIRD

(*Tyrannus tyrannus*)

The Kingbird measures about eight and one-half inches in length. He breeds in Canada and

throughout the United States with the exception of that part lying to the south west; appears in the vicinity of New York about the first of May, remains during the summer and about the first of September leaves for Central America, or for points south of Mexico, where he winters. His upper parts are black, orange patch on crown; wings with rather indistinct white markings, tip of tail white. Underparts are white. In the young the orange patch on crown is lacking.

In May a nest substantially constructed of sticks, grass, roots, moss and down is built on the limb of a tree, fifteen or twenty feet from the ground, sometimes higher. Here the eggs are laid, from three to five in number and white with brown spots, in color. His note is a repetition of short harsh sounds not at all pleasing to the ear.

With a record of over eighty per cent insect in the amount of food consumed, the economic value of the bird must be conceded. May beetles, cut worms, click beetles, weevils, grasshoppers, ants, wasps, robber flies, and caterpillars form a part of his diet. He is charged with destroying honey bees and many complaints have been entered against him on this score, though it would appear that such complaints were unfounded. Some six hundred and sixty-five stomachs collected from different sections of the



KINGBIRD

Order—PASSERES

Family—TYRANNIDÆ

Genus—TYRANNUS

Species—TYRANNUS

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country were examined with the result that in only twenty-two cases was any trace of the remains of the honey bee found, and of the sixty-one honey bees found in these twenty-two stomachs, fifty-one were drones. Mr. F. E. L. Beal, Assistant Biologist, from whose article the above data is culled, could no doubt have proven the remaining ten bees were disreputable characters fortunate to have met with such an easy death and to have later served the cause of science through the medium of a post-mortem examination. At any rate enough has been shown to justify the conclusion that so far as the honey is concerned the bird is not much of an offender and that he is of great value as a destroyer of insect pests. The Kingbird we know is a most welcome neighbor. He does attack Hawks and Crows, but both species are larger than he and it is not noticeable that either are attacked unless threatening the welfare of the Kingbird or his young. The Crow surely ought to be big enough to take care of himself and the Sparrow Hawk has the advantage of at least an inch and a half in length. I can recollect well an instance to which I have already alluded, when a considerable number of Song and Chipping Sparrows on the ground near the house porch, suddenly assumed a stiff and motionless position as if paralyzed with fear. A Sparrow Hawk hovering near was seen

to be the cause of the sudden fright, and when the Sparrows moved and again acted naturally, the cause of their returning confidence was also seen as a Kingbird that had appeared on the scene was observed in pursuit of the disappearing Hawk. The small birds seemed to know that the presence of the newcomer protected them from harm, though to do the Sparrow Hawk justice his history does not warrant a belief that he makes a practice of carrying off or of interfering with these birds under like conditions. The antipathy of the Kingbird toward the Crow and the Hawk would seem to be quite natural, and rather to his credit than otherwise.

BELTED KINGFISHER

(*Ceryle alcyon*)

The Belted Kingfisher is a thickset, bold looking long billed bird, measuring about thirteen inches in length; breeding from Alaska and central parts of Canada south throughout the United States, and wintering from Southern United States south to South America.

In color he is conspicuously dressed, his head back and tail being blue, and breast white. The crest on the head is almost black, and across the white breast is a belt of blue. Small white spots dot the wings and tail, and a single white spot appears



BELTED KINGFISHER

Order—COCcyGES
Genus—CERYLE

Family—ALCEDINIDÆ
Species—ALCYON

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in front of each eye. The female is marked like the male except that the belt across the breast is of dark red or chestnut and a streak in lighter shade runs along the sides. He arrives at his northern breeding place in April where he remains through the month of October, though if the fishing is particularly good, his stay is prolonged for a few weeks, when he leaves for his winter home.

His nest is of an unusual type consisting of a cavity at the end of a hole or tunnel to which he has worked his way through the earth from the entrance throwing the dirt out as he proceeds to excavate. The tunnel extends for a distance of from three to ten feet or more, varying from three to five inches in diameter, and leads to a larger space which comprises practically all there is of the nest, as little or no nesting material appears to be used. Here from five to eight white eggs are laid and here the young are born and reared.

The food habits of this bird do not furnish much of an argument in his favor from an economical point of view, for though he is credited with destroying small quantities of grasshoppers, frogs, crickets and beetles, his principal source of food supply is fish which he catches with dexterity. Still if he is not active in the destruction of noxious insects, he at least interferes with no one except possibly the casual

fisherman, and injures no property or business interests, which is much to be said for him after all. In place of a song he substitutes the familiar cry which has been described as sounding like a rattle or a policeman's whistle.

The Kingfisher appears an exclusive or unsociable bird so far as I have been able to observe, not mingling much with other birds and not desirous or willing to cultivate human society. We located two nests last year by following the direction taken by the birds when they had small fish in their bills which presumably was for the young. One entrance or hole was about six feet from the top of the bank about eighty feet in height and the other about two feet from the top of a bank about sixty feet in height.

In the case of the nest first referred to it was not possible to photograph the entrance owing to the height and the conformation of the bank. We attempted to secure a footing with the aid of a rope, but the incline was too abrupt and the sand slid when subjected to any pressure. The best we could do with this one was to view it from the shore through a field glass and from the top of the bank by means of a mirror tied to the end of a stick and held over the edge at the proper angle.

The other nest, that about sixty feet above the shore line, was in a bank near the surface of which

were roots and we were able with the aid of our tackle to get a sufficient footing to steady the camera for a second. The result was a snapshot of the entrance, and an examination which permitted of a fairly good description. The hole in diameter was four inches one way and a trifle over three inches in another. The outer edges were worn away somewhat irregularly. After the camera was snapped, a pliable branch was inserted in the hole and found no resistance for four feet when it met with an obstruction. After nesting season and when we had reason to believe the bird would have no further use of the nest, we dug down from the top and there found a cavity of irregular shape which measured at its largest point eight inches in diameter, and about six and one-half inches in height, containing nothing except a few fish bones and small roots which may have been broken off in tunneling. The diameter of the tunnel leading from the surface of the bank to the cavity was about three inches. The dimensions of the cavity were with difficulty ascertained for it was impossible to dig down without disturbing to some extent the walls on all sides, however we were as careful as possible and by approaching it on the side secured an approximately accurate measurement. Mr. J. H. Bennett who has been of invaluable aid to me in locating nests in out of the way places, located

this one and engineered the descent by rope in connection with the photographic incident. I had no opportunity of making any nesting observations owing to the natural difficulties presented and was obliged to content myself with following the bird's movements when he flew over land, and with watching from the water's edge when he was fishing from some convenient log, stake, or bent tree.

PURPLE MARTIN

(*Progne subis subis*)

The Purple Martin, one of the largest if not the largest of the swallow group, measures about eight inches in length. He breeds in Southern Canada and in most parts of the United States, appearing in the vicinity of New York during the latter part of April and remaining here until September when he migrates to South America for the winter. The male is a glossy blue black, a very attractive appearing bird in spite of the somber and unvaried coloration and the female is garbed in a dull finish dress of the same color above, with breast slate and belly white. He nests in tree cavities or recesses in decayed wood also in enclosed spaces provided for him. Perhaps the statement that he nests in bird houses built for him by others would more accurately express it, for nearly everyone who gives a thought to the comfort



PURPLE MARTIN

Order—PASSERES
Genus—PROGNE

Family—HIRUNDINIDÆ
Species—SUBIS

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of birds provides a "Martin House" in the shape of some sort of shelter box and these are almost always given the preference by the birds. Four white eggs are generally laid.

The greater part of the food consumed consists of insects, many of them not only destructive to property but of our personal comfort as well, the list embracing beetles, bugs, wasps, moths, flies, gnats and mosquitoes. This diet does not seem much to fight on, but the bird will, without any hesitancy, attack fiercely birds larger than himself and will frequently put them to flight. In place of a song he has a few notes which appear like chatter, and if not musical, are not unpleasant to the ear.

He is a sociable bird in the sense that he likes company and nests as he travels, in groups or colonies. In migrating he shows wonderful staying properties, covering great distances with apparently no distress.

The Martin is really a nice bird to have around. He is good natured and friendly in manner, leaves the other birds alone when not interfered with, and wants no help in supplying his table.

The shelter box provided by us for his use contains separate apartments, nearly all of which have been occupied at one time. He is apparently not a very thirsty chap nor does he include summer bathing in

the list of his indulgences, for I have never seen any of these birds make use of either the drinking or bathing accommodations. They may of course have done so in the early morning. Probably because of his food diet he never attended our morning conferences, contenting himself with coming quite near us, looking us over and then retiring. The individual apartments provided by us were provided with floor space six by six inches with a depth of seven inches and an examination made after the rooms were vacated showed the nests to be made of sea weed, grass, and paper, and in some cases, pieces of cloth and straw.

MEADOWLARK

(*Sturnella magna magna*)

The Meadowlark measures about ten and three-quarters inches in length, his range and breeding location covering most of the United States and parts of Canada. His upper parts are colored black and brown with light spots; sides light with brown streaks; throat and breast yellow with black necklace-like crescent on breast. The sides are streaked black, and the outer tail feathers which are white, are very noticeable in flight.

He may be looked for in this vicinity about the middle of March and expected to remain with us

until October when he leaves for winter quarters anywhere south of Washington, D. C., or that latitude, generally seeking a spot below the snow line.

A clump of tall grass is very apt to screen the nest which is placed upon the ground well hidden from view, and where from four to six eggs, white with brown spots, are laid.

The economic value of this bird is worth considering and is well shown in the examination of over fifteen hundred stomachs made under Government direction and supervision. Of the total amount of food eaten, animal matter formed seventy-four per cent; the remaining twenty-six per cent consisting of vegetable matter. Grasshoppers when in season, in August, contribute seventy-two per cent of the entire amount of food consumed; at other times, beetles, many of them of the most injurious variety, weevils, caterpillars, cutworms, ants, spiders, bugs and wasps contributing largely to the food supply. Even in the selection of vegetable matter a wise discretion is apparently exercised for in addition to waste grain and grasses, ragweed is included among the articles of diet, which fact should be borne in mind by hay fever sufferers and credit given to the bird accordingly.

Musically the notes of the Meadowlark that we of the East know, are pleasing to the ear. This is

well, for the bird is a pretty constant singer and a harsh or grating effort would be very trying to those within hearing. The Western variety of the species is credited with a song very much superior to our Eastern product, but the notes we hear are cheerful and smooth and cheery enough for even a captious critic.

NIGHTHAWK

(*Chordeiles virgianus virgianus*)

The Nighthawk measures in length about ten inches, the same size as the Robin, in flight perhaps appearing larger because of the size of the wings. Breeding in Canada and in most of the States, he arrives in the vicinity of New York about May first and remains until October, leaving then for his winter quarters in South America.

The head and back of the male are black, mottled with white; wings marked with white patch; white band across the throat and across end of the tail; underparts black and white. The female is marked the same except that the throat is not so white and there is no white band on the tail.

In nesting he is not even as fussy as the Whip-poor-will or Bob-white, usually depositing the eggs, two in number, and white and brown mottled in color, on bare ground or stone, with no attempt at



NIGHTHAWK

Order—MACROCHIRES
Genus—CHORDEILES

Family—CAPRIMULGIDÆ
Species—VIRGINIANUS

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nest construction. While keeping late hours and devoting the night to the search of food, he is also seen occasionally in the daytime before dusk, darting swiftly in pursuit of some flying insect. In Florida they have been pointed out to me as "bull bats," by which name they are generally known in the South.

His diet, one hundred per cent insect, constitutes him a good paying investment and he is one of the best insect destroying birds we have. An examination of stomach contents discloses thousands of these pests of a single kind and some fifty different varieties. About one-quarter of the total food eaten is made up of ants, and one-fifth composed of June bugs and beetles. Dragon flies, mosquitoes, gnats, moths, bugs, flies, grasshoppers, crickets and weevils make up the balance of stomach contents; dung beetles, click beetles, wood borers and other injurious pests being included in the assortment.

A single note is, so far as I know, the only claim to musical attainment made on behalf of this busy bird but that note is loud enough to attract attention. The booming sound when he makes a long swoop earthward is one of the most astonishing sounds in Nature. When he gets ready to leave for his southern home, the clans flock in large numbers, hundreds of the species gathering in one place and making the journey together.

The Nighthawk is one of the birds quite commonly known whose nesting habits have not come under my personal observation. He flies by day as well as by night and it would seem that abundant opportunity for observation were offered, but I have not found this to be the case. While he makes no attempt at nest building, it would seem likely that some preference is exercised in the selection of a place of deposit for eggs; for an egg, undoubtedly one of his species was found on the top of a low rock in a spoon-like depression in the stone, as if the advantage of such a shaped stone over a level or slanting surface were appreciated. But one egg was found here from which it was assumed to be a case of one egg not hatching.

WHITE-BREASTED NUTHATCH

(*Sitta carolinensis carolinensis*)

The White-breasted Nuthatch measures about six inches in length and breeds in the United States and Canada. While not migratory in the sense that other birds journey distances in Spring and Autumn, he is a bit roving and may be found to change his habitat when it means an improved food supply. In color his back is a bluish gray, wings gray edged with black, outer tail feathers edged with white, top of head black and underparts white.



WHITE-BREASTED NUTHATCH, UPPER FIGURES. MALE AND FEMALE
 RED-BREASTED NUTHATCH, LOWER FIGURES, MALE AND FEMALE

Order—PASSERES
 Genus—SITTA

Family—SITTIDÆ
 Species—CAROLINENSIS AND CANADENSIS

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He is another of the birds making his nest in some hole or cavity in tree or log, excavating with his bill if the decayed character of the wood permits it and if necessary, occupying some cavity already made. At the bottom of the hole some soft stuff such as moss, feathers or leaves is placed, with no attempt at constructing anything cohesive in the way of a nest.

From four to eight eggs are laid here, whitish, pretty well marked with brown spots.

One-half the food eaten by this bird consists of insects, caterpillars, canker worms, beetles, ants, spiders, moths and plant lice making up the total, while nuts, acorns, seeds and waste grain comprise the vegetable diet. In prosecuting the search for tree vermin he exercises considerable skill in rapidly moving up and down the trunks of trees, winding, as would a spiral staircase, around and around in the ascent or descent, sometimes, when examining a nearby limb, clinging to the bough while upside down, a feat he is able to accomplish by means of foot formation, the nail on one toe of each foot being larger than the others. Expert in inserting his bill into the fissures and crevices of the bark in search of eggs and insects, he moves rapidly, covering a good sized tree in a short time.

The notes or sounds uttered in the Summer are

more like grunts, the laughing notes being reserved for winter use.

The Nuthatch is a useful bird, and pleasing enough to look upon, but he is not sociable or neighborly, preferring, as a rule, to keep to the quiet and seclusion of the woods. One or two appeared now and then in the open, but apparently made no use of either the drinking or bathing accommodations offered, at least I never saw any of them use either. We were willing and anxious to know them better, particularly in the Autumn when they appeared in the open frequently and in greater numbers, but aside from finding one of their nests which was in an abandoned log, and watching them inspecting the trees in their search for eggs and insects, we learned nothing of their nesting habits. Winter is no doubt the time to best observe this bird and to make his better acquaintance.

The nest in the log referred to had evidently been that of a flicker, and the wood having been removed in the front and rear, the bark, reinforced by a very thin layer of wood, was all that kept front and back together. The entrance hole, enlarged by decay at the edges, was three and a half inches in diameter, the cavity itself being at least two inches larger. A collection of leaves, moss, and feathers formed the nest and filled the hole pretty well up to the level of the lower edge.



BALTIMORE ORIOLE

(UPPER FIGURE, MALE; LOWER FIGURE, FEMALE)

Order—PASSERES
Genus—ICTERUS

Family—ICTERIDÆ
Species—C. GALBULA

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BALTIMORE ORIOLE

(Icterus galbula)

One of the most attractive of our Summer birds is the Baltimore Oriole, pretty in appearance and sweet in song. He measures about seven and one-half inches in length, head, neck and back, except just above the tail feathers, a jet black; a wide streak of orange running from the middle back to the upper tail feathers which are orange and black; wings also black with white edges and white bars; and throat black. The rest of the bird, from the lower part of the throat is a bright rich orange which with the lustrous black, makes a very striking and conspicuous object. The female is not similarly marked, her upper parts being of dull orange and black, wings orange brown with white marking, tail and under parts a dull yellow.

He breeds in the upper half of the United States and in the eastern part of Southern Canada, spending his summers here and migrating about the first of September to Central and Northern South America. He is not found on the Pacific coast. In early May his beautiful song is heard in the vicinity of New York, claiming our attention even if his striking dress had not already attracted us, and in mating season he is much in evidence in the open and about the

yard and farm, unobtrusive however, in his nest making operations, appearing to prefer collecting his building materials unobserved by the general public.

Where he originally obtained his nest patterns would be interesting information for he produces a bag-like receptacle which for formation and for the ingenuity displayed in the manner of building is certainly wonderful. Selecting a site, generally high above the ground level and on the outer of smaller branches or limbs, he gathers together dry grass, hair, bits of twine, wire grass, leaves, small pieces of soft cloth, and in fact most anything pliable, soft and holding, from which he constructs a bag shape nest, the entrance to which is a hole at or near the top. Here, in the swinging cradle, the eggs are laid, from four to six in number, five appearing to be an average set. They are white with a few black spots or marks frequently resembling etching in appearance.

To an attractive appearance we must add the Oriole's musical qualifications for he is a beautiful singer and generous in the exercise of his accomplishment, but perhaps his diet, from a practical viewpoint, is his greatest asset. An owner of plum trees and grape vines tells me the Oriole is destructive to the fruit of both tree and vine, but we have both the trees and vines on the place and I know of no instance in which either fruit has been injured from this

source. The number of noxious insects destroyed by this bird establishes his economic value and some tests have not confirmed these statements regarding damage to crops. Stomach tests in two hundred and four cases establishes the fact that caterpillars form thirty-four per cent of food eaten, in addition to a varied, if not choice assortment of beetles, bugs, ants, grasshoppers and spiders; while the vegetable matter eaten when in the United States amounts to about sixteen per cent of all food consumed, and in the tests made a trace of peas was found in but two cases, but no trace at all of grapes. Surely this is a very creditable showing.

The Baltimore Oriole, while seen and heard frequently in the vicinity of the house, was never companionable, and never made any effort to be friendly, though the two pair nesting on the grounds spent many an hour in the big tree nearby and occasionally used the drinking cups and baths patronized by the other birds, which in itself was an indication of confidence as the water supply is within ten feet of the porch. Nor did they ever make use of the feedbox so far as I knew even in nesting season and while the young were still on the nest or at any other time. Two nests were noted and watched last year, one suspended from the cross boughs of a rustic gateway at the entrance of the drive and about

fifteen feet above the roadway; the other about the same distance from the ground, on outer branches of an elm tree within twenty-five feet of the house. In the latter case the nest was not favorably located for observation purposes, the only thing definitely ascertained being the number of young which was five. The other nest, that on the gateway, which was covered with honeysuckle vine, was accessible however, from a part of the gateway itself, and at the risk of scaring the mother bird away, it was closely watched, and examined during the short absences of the parent bird. From such examinations it was ascertained that there were five eggs laid, that the period of incubation was eleven days and that the young were out of the nest on the eighth day. Four birds were hatched and after the nest was vacated, it was taken down and examined, and the one egg which had not produced was removed. This nest was composed of dry grass, twine, horse hair, leaves and wire grass with the opening at the top. A nest located in a maple tree had the following dimensions:

Diameter at middle $4\frac{1}{2}$ inches one way and $4\frac{1}{2}$ inches the other.

Depth of nest itself, 6 inches.

Diameter of entrance hole $2\frac{3}{4}$ inches one way and $1\frac{1}{4}$ inches another.

Another nest built on an outer limb of a Cherry tree and almost twenty feet from the ground, was 4 inches in diameter at the middle; depth of nest itself $7\frac{1}{4}$ inches, with the entrance at the top, 3 inches in diameter one way and $2\frac{1}{2}$ inches the other. This nest contained three windows in which respect it encroached on the building plans of the Orchard Oriole who generally provides these peek holes in houses built by him. A piece of yellow yarn was twisted in and out of the upper part and was recognized as a part of the assortment placed by us in a nesting material box on a nearby tree, so we knew that the shop had at least one customer if no others.

SCREECH OWL

(*Otus asio asio*)

The Screech Owl, about nine and one half inches in length, is not only one of the smallest but is perhaps the commonest of the Owls, the presence of which has become familiar about the country home. He breeds pretty much throughout the United States and Canada. In coloration the species present the anomaly of appearing in two distinct dresses, one a gray, the other reddish or reddish brown. The upper parts of both dresses are streaked with black, the under parts being gray or white, with brown and black streaks. The eyes are a bright yellow. For

nesting purposes most any tree cavity large enough will answer in which to deposit the white eggs, from three to six in number, and convenient outbuildings or barns look pretty good to him for housing accommodations. Of night flying habit his food is secured as a rule after nightfall, when he leaves his day quarters for a tour through groves, bush, orchards and the open. Mice, spiders, moles, chipmunks and even the young of birds, form a part of his diet and if in his wanderings he gets more than enough for his immediate needs, a surplus of mice is stored by him for future use.

Economically he helps out also by destroying numbers of noxious insects, grasshoppers, lizards, beetles, cutworms, and caterpillars being included, and in a substantial amount, in his bill of fare. Most of the small birds eaten are taken in mid-winter or in the nesting season however, when it is found difficult to supply his own young with food, and as an examination of stomach contents shows three-fourths of the food consumed to be mammals and insects of a noxious nature, and but one-seventh of the whole amount to consist of birds, the general average seems pretty good especially when the English Sparrow forms a very considerable proportion of that one-seventh part. On the whole his food habits constitute him a distinct asset.



PHOEBE

Order—PASSERES
Genus—SAYORNIS

Family—TYRANNIDÆ
Species—PHOEBE

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The Screech Owl, either from motives of modesty or because of his day sleeping habits, is not very obtrusive and if we were not reminded of his presence during the summer by the doleful sound emanating from his direction, we would forget he was about for we seldom have an opportunity of seeing him.

PHOEBE

(*Sayornis phæbe*)

The Phoebe whose note strikes the ear so pleasantly, measures about seven inches in length, and breeds from Central Canada south as far as South Carolina. He spends his winters from the Carolinas south to Mexico. A quiet garb is his, the back, head and tail being colored an olive of brownish tint, shading darker toward the head and tail; throat white with whitish underparts; the shorter wing feathers and outer tail feathers being edged with white. Male and female are marked alike. In March he may be looked for in the neighborhood of New York, remaining there until October when the greater number leave for their southern homes, though many continue their stay until well into the Autumn.

As if to announce in advance his democratic and friendly disposition, any cross beam, rafter or pro-

jecting board will do upon which to build his nest, and this may be located in the barn or shed, over the veranda or under the overhang of the house roof. The rather well built structure is composed of moss, feathers, pieces of wool and the like, with mud used as a binder, the whole being put together in a very substantial manner.

From four to six eggs are laid, four generally constituting the full number. These are white as a rule, but I have seen eggs in a Phoebe's nest slightly marked with spots brown in color, the eggs retaining these markings until the young were hatched.

The diet of this bird is wholly unobjectionable from an economic viewpoint as insects comprise practically the only food eaten, and while he is helping the farmer or gardener by destroying the beetles which do so much injury, he is also administering to our physical comfort by killing large quantities of gnats, midges and flies, in fact there are few fly catchers as clever as he.

His song or rather his call, has a pleasing if a bit plaintive sound, and the "Phoebe" is perhaps as tuneful as are most of the notes with which the bird lover is familiar.

The Phoebe is a quiet acting sociable little bird, as modest as his dress and as neighborly about the house and grounds as one could expect from one



REDSTART

Upper figure, female. Lower figure, male.

Order—PASSERES

FAMILY—MNIOTILTIDÆ

Genus—SETOPHAGA

Species—RUTICILLA

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whose notes are so frequently heard in the woods. One family attended my morning class, the male generally announcing his arrival from a big tree some ten feet or so from my chair. Their nest was on the edge of the woods only a step from the open and was located about eight feet from the ground on a limb which extended under the overhang of a tool house. As friendly as they were, they never came near the feed box, and seldom used the baths or drinking cups, unless they did so at night when unobserved. The presence of another pair on the grounds and the fact that a part shelter was used in locating one nest led me to believe that a rest box might be utilized for nest building, and a box open on the sides was placed in position. It was not made use of however, and I was not able to discover where this couple built though they were frequently seen near the house and presumably had located nearby. I believe we will some day have the all-inclosed houses occupied by Phoebes as they seem to prefer sheltered quarters.

REDSTART

(*Setophaga ruticilla*)

The Redstart measures about five and one-half inches in length. He breeds from Labrador to North Carolina, arriving in the vicinity of New York about

the first week in May and remaining until the first week in October, when he leaves for the Tropics where he stays until the following May. The predominating colors of the male are orange and black, upper parts black with outer tail feathers and wings marked with bright orange; throat and breast black; a bit of orange on each side of the breast; and belly white. The upper parts of the female are gray in place of the black, and the marks on the tail and wings are yellow in place of the bright orange. The under parts and also the throat are light. When born the young male is marked with the colors of the female, which undergo a change until he arrives at the discretionary age of three years when the familiar orange and black are distinctly in evidence.

Bark, straw, fiber and soft stuff compose the material used in the construction of the nest which is frequently bowl or cup shape, and located on a limb of a young tree, six feet or more from the ground. The eggs, numbering from three to five in number, are a dull white marked with brown spots.

As with all the warblers, insects form a considerable part of food eaten, the destructive leaf hoppers and tree hoppers receiving especial attention from this member of the group, which is of the tree inspecting rather than the ground variety. The song of the male consists of four or five notes, which



ROBIN

Order—PASSERES
Genus—PLANESTICUS

Family—TURDIDÆ
Species—MIGRATORIUS

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attract attention even if they are not suggestive of mood or meaning.

The Redstart suggests at times the Baltimore Oriole in appearance when a good look is not obtainable, the movements of both among the trees being very quick. The one family of Redstarts nesting on our grounds gave us little encouragement to be hospitable, as they kept well to themselves, did not mingle with the other birds and except when on nearby trees kept to the woods. Neither food nor water enticed them near the house in the daytime, the trees furnishing them with food in the nesting season as at other times.

ROBIN

(*Planesticus migratorius migratorius*)

In a contest to determine what bird is most popular in the opinion of the general public there can be no doubt that the Robin would win the coveted distinction. Birds there are of more brilliant plumage, whose songs are as tuneful and whose address is as pleasing but if the public know them at all they are not especially impressed one way or the other and the Redbreast with his attractive appearance and engaging manners is easily the popular favorite.

The Robin measures about ten inches in length. The upper parts are brown; with head and throat a

deeper shade or black; the beak yellow, and the underparts of dark red, both the male and female being colored alike. He breeds in most every section of the United States with the exception of the lower tier, and in Alaska, Canada and Mexico. Not all of their species migrate, that is to say while many go south and winter there, others either remain in the north where they have bred or go southward a short distance only, in fact in pretty much all of the United States they may be found during the winter months. Those who have gone south in the Autumn return north about the first of March when it is still cold, when snow is frequently on the ground and before a food supply is in sight. Why they return so early when everything is yet frozen is as much a mystery as their migrating but a short distance in the Autumn without going far enough to secure relief from the severity of winter or to benefit themselves in the matter of food. It would appear that they become uneasy and just want a change, those who have the wanderlust leaving as early as September and as late as December. They frequently nest earlier than some of the other birds, the latter part of April finding their nests already built, and they sometimes raise a third brood. Almost any location seems to suit them as long as they are permitted to construct their own nest and it may be in the closely limbed bush with an

abundance of foliage; in a cedar tree with almost no privacy; or under the overhang of a convenient roof; building, where trees are selected, about six feet or more above the ground. Twigs, grass and roots are included in the material used, with moist earth, which acts when it dries, as a binder. Four eggs constitute an average set, their color being a greenish blue.

Concerning the economic value of the bird there is a difference of opinion, due to the fact that at least fifty per cent of the food eaten consists of fruit, but most of this is wild fruit and does not affect the fruit grower's supply. A test based upon the examination of over twelve hundred stomachs shows that forty-two per cent of the food eaten is animal matter, mainly insects, the remainder being berries or fruit. Over sixteen per cent consists of beetles, one-third of which are considered useful. About five per cent of the whole food is made up of grasshoppers, in August this percentage being increased to seventeen per cent. About nine per cent are caterpillars and about twelve per cent a combination of various insects with a few spiders, angle worms and snails added.

Fifty-eight per cent of food taken is vegetable, forty-two per cent of this being wild fruit and about eight per cent a variety of cultivated fruit. In June and July this percentage is increased to about

twenty-five, but the proportion is small in August. In view of the number of noxious insects destroyed and the comparatively small percentage of cultivated fruit consumed during the entire season, the economic status shown is not bad, for the bird after all has been busy all Spring, and the fruit yield which has to some extent been damaged by the bird, would probably be still further depleted by insects except for this Spring activity on his part.

The Robin is a bit timid and shy when in the vicinity of the house and grounds, but is trustful and friendly upon acquaintance. He was a regular attendant at our morning sessions, and would approach within a foot or two with caution perhaps but still with an appearance of confidence. In selecting his location for building purposes he assisted me very much, for his nests were, as a rule, approachable and subject to observation. During the nesting season he patronized the food box regularly. The nest already referred to by me as located in a cedar tree near the house, in plain view, was constructed of twigs, grass, roots and sea weed, with a binder of mud; was placed about six feet from the ground; and measured four and one-quarter inches in diameter outside; three and one-half inches in diameter at the top inside; depth in center one and one-half inches.

The four eggs constituting the set were all hatched,



SPOTTED SANDPIPER

Left-hand figure, young; right-hand figure, adult
(One-half natural size)

Order—LIMICOLÆ
Genus—ACTITIS

Family—SCOLOPACIDÆ
Species—MACULARIA

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the period of incubation was twelve days, and the young remained on the nest eleven days.

SPOTTED SANDPIPER

(*Actitis macularia*)

The Spotted Sandpiper, known all along shore as the "Tip up" is about seven and one-half inches in length. He breeds from Canada through the United States as far south as the Southern States, and winters from there south to Brazil. In the latter part of April he may be expected to arrive in the vicinity of New York, where he summers, leaving for his winter home in October, about the middle of the month.

His upper parts are gray with indistinct black streaks, a white streak showing under and over the eye; under parts white covered with black spots. The coloration is alike in both sexes.

The nest composed of grass of the large coarse variety, is placed upon the ground and is found in any open field, as likely in a pasture as not, within a short distance however of the water, for though he leaves the shore when locating his nest, he is distinctively a shore bird and except for nesting purposes, is seldom seen far from the water's edge. Four and sometimes five eggs are laid, white, liberally spotted with dark brown, and rather abnormally large in

size, the latter circumstance being accounted for by the fact that the bird has a covering of down when he leaves the shell.

His food diet includes grasshoppers, bugs, flies, worms of destructive habits, and cray fish. A short sharp call is the only claim to anything musical made on behalf of the bird, and his two syllable sound is as familiar to the ear as the teetering or tip up motion with which he moves, is to the eye. The Sandpiper seems a quiet well behaved body, but though he probably has a nest somewhere in the neighborhood, for he is seen on shore at the top of the bank at times, he spends little time during the day in the field so far as I have noticed, remaining near the water on the shore front. Any information to be gleaned by close-up observation in the field I have, therefore, been unable to get. While on the shore front he seems busy enough, rapidly running along the water's edge apparently in search of small fish.

CHIPPING SPARROW

(*Spizella passerina passerina*)

Best known of all the commoner birds with which we are familiar, the Chipping Sparrow is larger than he really looks, measuring about five and one-quarter inches in length. Of chestnut brown, with streaked



CHIPPING SPARROW

Order—PASSERES
Genus—SPIZELLA

Family—FRINGILLIDÆ
Species—PASSERINA

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wings partly crossed with two white bars; reddish brown cap with white rim; black beak, and under parts of light slate, he is a modestly dressed little party, being scientifically known as "*Spizella passerina passerina*." He probably does not know this and would no doubt answer to the name no more readily than to the familiar "Chippy," but he is really quite a pleasing and useful body and entitled to as long a name as many of his more conspicuous companions. In the Fall he sheds his reddish brown cap. Throughout the United States he breeds, appearing in the North in early April, remaining with us until well through October and then making the journey to the Southern States where he winters.

Busy is he in mating season, selecting as a site for his nesting home a bush, shrub or small tree which just as likely as not is close to the house. Here he brings small roots, dry grass, with occasionally a bit of hair or wire grass and builds a nest quite screened from view. Four or five eggs comprise a full set, generally four, their color being of blue or greenish tint with black or brown spots. He raises two broods during the season. Farm, road, garden, or yard are all the same to him so long as he has company, his trustful disposition accounting for his being much of the time in the open and about the house, his sociability being much more in evidence than his

qualifications as a songster. His singing is in fact confined to the "Chippy" call from which he takes his every day name.

It is in the matter of diet that he qualifies as a useful member of society, and more than holds his own in competition with the forty species, and as many sub-species inhabiting the United States. Seeds form a large part of the food supply, but the vegetable diet is not as large a proportion as one may think, insects forming a very considerable portion, especially during the late Spring and early Summer. Then he not only feeds to a large extent upon insects, but feeds the young with this delicacy, an examination of the stomach contents of Chipping, Song and Field Sparrows showing that beetles, weevils and grasshoppers make up one eighth of the total contents while potato bug larvæ, wasps, ants, plant lice and other bugs, spiders and caterpillars are added to the diet. It has been estimated that in the month of June over ninety per cent of the total food supply consists of insects. To the truck farmer he is of invaluable aid, killing the caterpillars that feed on cabbage, and destroying the pea louse which ruins so many pea crops. That he will attack and kill the caterpillars of the notorious gipsy moth, the destroyer of so many trees, is well known. With a general percentage of something over forty per cent

insects and about sixty per cent vegetable matter, outside of the June showing, the economic usefulness of our diminutive friend is fully established. A very friendly sociable bird I found the Chipping Sparrow on our first meeting in April, and very useful later when I was trying to organize my morning class, for he was never very shy and his example in coming close to my chair and remaining for some time with no apparent fear that any harm could possibly come to him, must have inspired the other birds with confidence and encouraged them to follow suit. After becoming acquainted our little friend was perfectly at home about the house, on the chair occupied by me or on the porch, and would frequently follow me for a distance on my walks about the place. An average nest under observation, one built in a deutzia shrub growing alongside the house, was placed about four feet from the ground and made of dry grass with a few roots.

Its dimensions were:

Diameter at the top, outside	.	3 $\frac{1}{4}$ inches
Diameter at the top, inside . . .	.	2 "
Depth in center	.	1 $\frac{1}{2}$ "

Two broods were raised in this nest. In the case of the brood under observation, four eggs constituted the set, all being hatched. The period of incubation

was ten days and the young left the nest on the eighth day.

ENGLISH SPARROW

(*Passer domesticus*)

The English Sparrow or European House Sparrow measures about six and one-quarter inches in length and breeds throughout the United States and Southern Canada. Introduced here in 1851 from Europe, he at once accustomed himself to his new surroundings and is now so generally known that any description seems unnecessary. With upper parts gray, and mottled or streaked brown, wings and cheeks marked with white, and underparts black and gray, he is a familiar sight, more often seen in the cities and in built up sections of the country. Building a nest of grass, straw or string, located frequently under overhung roofs, in tree cavities or behind awnings, in fact most any place affording a shelter from wind and storm, from five to seven eggs light in color, with black markings, are laid. As it is not unusual to raise during the one season three or four broods, it may be seen how rapidly they multiply. No song is indulged in, a twitter being the only sound to which he gives utterance. His food habits have not been considered of benefit to anyone, though a number of insects have contributed to his larder, as in the country he



ENGLISH SPARROW

Order—PASSERES

Family—FRINGILLIDÆ

Genus—PASSER

Species—DOMESTICUS

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has destroyed grain, fruit and vegetables. It is not certain however, that his economic importance may not have been underestimated and his value as an instrument with which to fight the alfalfa weevil now doing much damage in some of our Western States, remains to be proven. His general bad reputation is no doubt the result of his actions in driving away other birds, but it must be remembered that he was brought here and dumped in our cities where of necessity he had to fight for his existence, and this very precarious method of subsisting has made him hardy and aggressive. It appears that the range of the bird's activities are gradually being extended beyond the Cities and that certain sections of the country now contain large numbers of the species, but I have no recollection of having seen an English Sparrow on our place at any time. For those who are annoyed by the presence of these birds, Sparrow traps, devices for entrapping the bird, have been devised and are reported as working very satisfactorily. They may be procured from most any of the dealers in protective devices. Why anyone thought it necessary to bring from a foreign country this undesirable addition to the Sparrow family is more than I can understand. It would appear to be another blunder as was the importation of the Starling.

SONG SPARROW

(Melospiza melodia melodia)

The Song Sparrow, we in the vicinity of New York know, about six and one-quarter inches in length, is in size a bit larger than the "Chippy" and not quite as large as the well known English Sparrow. In color his upper parts are brown streaked with a lighter shade, crown still lighter, and under parts gray with brown spots, one spot on the breast noticeably larger than the rest, being a distinctive marking. As his range is wide, he is not always recognized in the one dress, his plumage becoming darker as he approaches those sections of country in which the average rainfall increases, and so the subspecies are of slightly different color in different localities. He breeds in practically all of the United States with slight exception and also in Canada, Alaska and Mexico; spends his winters in Alaska and in that portion of the United States south of it, and is among the first to appear in the North in the Spring, in fact arriving in February and remaining with us through the month of October.

When he is ready to build he sometimes selects a shrub, bush or hedge, but more often places the nest on the ground like the Towhee, making it of roots, bark and grass with softer grass or some smoother

material as the inner layer. From four to five eggs constitute a full set, four being the average clutch, their color being white spotted with brown. As his name would indicate his is a song very pleasing to the ear, and though he sings much of the time, he manages between his vocal selections to raise three broods from the beginning of the nesting season. For a small bird he is very helpful economically in cultivating and satisfying an appetite for destructive pests, three-fourths of his menu consisting of seeds of objectionable weeds and the remaining fourth insects, including weevils, beetles, caterpillars, grasshoppers, bugs and ants.

Of the birds commonly seen and which visit the farmyard, house and garden, the Song Sparrow is as a rule as timid and shy as any of the lot and apparently the least willing to increase his circle of acquaintances. Even the Blue Jay occasionally makes friendly advances, but the little Sparrow, while patronizing the baths and drinking water, and making use of the feed box in nesting season, will not let you make anything of him and rarely will assume any degree of familiarity. He will attend our morning class and will approach quite near, but remains on the outside of the circle, and if inquisitive enough to join his companions on the porch as he sometimes does, will stay near the edge or near the steps as if

anticipating the necessity of making a quick escape. He seems an industrious peace loving member of his tribe, and an assiduous gatherer of food, which his three families in the one season may no doubt make necessary. All of the five nests made last year that came under my notice were built on the ground. Of the two under observation one was located partly under a brush heap, at the edge of the woods and was made up of small twigs, grass and small roots, with a few small loose pieces of paper in the lining.

Its dimensions were:

Diameter at top, outside	.	.	4½ inches
Diameter at top, inside	.	.	2¼ "
Depth in center	.	.	¼ inch

Of the four eggs constituting the set, all were hatched, eleven days being the period of incubation and the young remaining on the nest nine days.

BARN SWALLOW

(*Hirundo erythrogastra*)

The Barn Swallow is about seven inches in length. Except in some of our Southern States he may be found throughout the United States and in Canada, breeding within the same territory.

His upper parts are blue, a chestnut patch marking his forehead; his throat a rich chestnut, breast and



BARN SWALLOW

Order—PASSERES

Family—HIRUNDINIDÆ

Genus—HIRUNDO

Species—ERYTHROGASTRA

National Association of Audubon Societies

belly also chestnut, but of a lighter shade. The tail is long, is deeply forked and is marked with white. The coloring of the female is of a much duller shade, and the forked tail is less noticeable. He appears in the vicinity of New York about the middle of April, remains until October and then starts on his journey to South America where he winters. As a home builder his ideas of the space required in bringing his family into the world are generous, and the substantial well-like nest of grass and mud, generally lined with feathers or some soft substance appears several times larger than necessary for the three or four and sometimes five brown speckled white eggs deposited there. The interior of some shed or out-building is preferably selected as a building site.

Much of the food supply is gathered on the wing and consists of flies, gnats, mosquitoes, flying ants, flying beetles and other of the smaller insects.

No song punctuates his rapid movements, not even a note being appropriated by him for his use unless the twitter which indicates his presence can be called a note, though he is a happy appearing bird and would no doubt enjoy giving pleasure to others.

The Barn Swallow is very swift and graceful in flight and the abruptness with which he changes his course is fascinating. He is not what may be called a sociable sort though found much in the neighbor-

hood of house or outbuildings. He almost always prefers a roof over his head, and barns are much to his liking for nesting purposes as is shown by the number of those that nest in such buildings. It would pay the farmer, if he only knew it, to leave an open space through which the Swallow could enter, though there seems to be some unwritten but inflexible law by which barns are constructed as nearly air-tight as possible. A prejudice has existed in the minds of some against keeping the nests of these birds in the house with the rest of the collection, because in so many cases they are vermin infested. The insect affecting in many instances the home of the Swallow however is parasitic, and is quite as particular regarding his companions as any house owner can possibly be. He will not remain long when separated from the bird, and the nest if placed in the open and allowed to remain there awhile, will become quite orderly and respectable.

TREE SWALLOW

(*Iridoprocne bicolor*)

The Tree Swallow measures nearly six inches in length, his range and breeding place including nearly all of the United States and northern Canada.

The upperparts of the male are greenish blue, with throat and underparts a clean white, the forked



TREE SWALLOW

Order—PASSERES

Genus—IRIDOPROCNE

Family—HIRUNDINIDÆ

Species—BICOLOR

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tail characteristic of the Barn Swallow being missing. The female is gray above with underparts white.

As he has but a short distance to come, having spent the winter months in the Southern States, the first part of April finds him in New York or its vicinity and here he remains until the leaves have fallen and the cold nights of late October send him on his way south.

Formerly a tree cavity or hollow space was selected as a breeding home, even a deserted nest being utilized if conveniently located, but of late years good natured or far seeing persons have provided shelter boxes for their use and now such a box is pretty sure to be utilized if there are any Tree Swallows in the neighborhood. A nest of grass with no binding material furnishes the house very nicely and the three or four white eggs generally deposited are very comfortably looked after by the parent birds.

All the Swallows have reputations as destroyers of noxious insects and this branch of the family sustains its reputation, beetles, ants, flies, mosquitoes, gnats, midges and other small pests contributing liberally to the amount of food consumed.

Like the rest of this family he has no song with which to ingratiate himself into the good graces of those near whom he makes his home, and the note or twitter indulged in is scarcely of a musical sort.

The Tree Swallow seems nearer than many of the other birds, probably because he moves into the house provided for his use and gives us the pleasure of knowing we are contributing to his comfort. Then again when we take the trouble to plant bayberry bushes in the hope of attracting our birds, it is some satisfaction to know that our action is appreciated and this Swallow does like bayberries. When in the Fall the berries are good and red and have satisfied the appetites of our visitor and his friends, we notice little groups gathering here and there and we can read the signs. They are flocking preparatory to leaving for the long winter, and when hundreds and hundreds of the little white breasts are seen on the telephone and telegraph wires we look out some morning to find them gone. They have taken the "Day Line" for the sunny South, and you take the shelter box down and get it ready for their use next year when you hope they will return and bring their friends with them.

One of the nest boxes provided last year was a tin cracker box the dimensions of which were 5 x 5 inches floor space and $7\frac{1}{2}$ inches in height. About 2 inches below the top an entrance hole $1\frac{1}{2}$ inches in diameter was cut, a hole cut a little below and to the right of the hole through which a resting perch was attached, and the box fastened to an oak tree. It was occupied



SCARLET TANAGER

Male, in mature plumage, perching; female on nest

Order—PASSERES

Family—TANAGRIDÆ

Genus—PIRANGA

Species—ERYTHROMELAS

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by a family of Tree Swallows and after it was deserted, one side of the box was cut away affording an interior view. Dried grass was the only material used for nest formation but was loosely arranged, filling a little less than one-half of the box and reaching on one side to about the level of the entrance. Three young were here hatched and as there was no sign of another egg when the box was opened it was assumed that three eggs were in this case all that were laid.

SCARLET TANAGER

(*Piranga erythromelas erythromelas*)

Wearing as strikingly brilliant plumage as any of our birds, the Scarlet Tanager is as noticeably conspicuous in the color scheme of bird study as he is interesting.

About seven and one-quarter inches in length, the scarlet body, black wings and tail, and light beak of the male bird at once attract attention and make his identification easy and complete, while the olive green head, back and wings, and light yellow breast of the female form a picture as modestly attractive as the other is conspicuous.

His range embraces the Eastern States and as far south as northern Virginia, Georgia and South Carolina. He is found as far north as Southern Canada. Arriving in the vicinity of New York

about the first of May, he remains here until the first of October, and then leaves for a warmer climate, wintering generally in some part of South or Central America.

The nest of the Tanager which is made up of pieces of stick, twigs, roots and dry grass is in comparison with that of most other birds, carelessly and insecurely constructed, the material being apparently thrown together with no thought of its remaining where placed for any length of time. This nest is usually assembled on lower branches of trees or bushes, more frequently being built upon those branches of oak or some of the evergreens that run nearly horizontally, and in some cases has been found located on the ground. From three to five eggs constitute a clutch and are, in color, a light blue marked with brown spots.

A singer of no mean ability, some parts of his song are much like that of the Robin and Rose-breasted Grosbeak and would in itself attract attention even were the bird not so strikingly garbed.

Not of as much value perhaps because of his insect destroying habits as some of the birds, he is nevertheless of much use in killing the leaf eating caterpillars, weevils, beetles which do much harm to bark and trees, gipsy moths, worms, ants and ground bugs, an economic record not to be ashamed of after all.

More interesting however, than the brilliant dress, pleasing song and food habits, is the change of plumage which the male undergoes during the moulting season. He comes to us in the Spring in scarlet dress, looking fresh and bright after his trip from Central or South America where he has wintered, quite a long journey during which to retain his spick and span appearance. After nesting and after the moulting which succeeds the nesting season, he has shed his conspicuous dress of scarlet for the modest and unobtrusive olive green of his mate. To anyone who has seen the bird before and after moulting the change of plumage is certainly most interesting.

The Scarlet Tanager is a shy bird and has either a distrust of man or a disinclination to enlarge his experience or list of acquaintances; at any rate he never remained near the house long enough to join the other birds in friendly calls, though the drinking and bathing facilities nearby were patronized by him, when the other birds were not so numerous. His song is, I think, as pleasing as that of the Robin, and his business-like manner of addressing himself to the inspection of limb and leaf which he does assiduously, commends him as a desirable neighbor. He has also another qualification which should count for much, *viz.*, he is one hundred per cent American for I know of no other country in which he is found. We had

last year a nest located on a lower limb of an oak tree where a clutch of four eggs was deposited. Authentic data regarding the period of incubation and the time the young remained on the nest could not be recorded though we know that of the four eggs laid all were hatched and that the young were marked neither like father or mother, yellow and green being their predominating colors. They did not stay around however, long enough to enable me to follow the changes if any, though they no doubt assumed the colors worn by the mother when they were full grown. The nest referred to was composed of twigs, dry grass and small roots, loosely put together.

BROWN THRASHER

(*Toxostoma rufum*)

With his rich suit of cinnamon brown above lighter breast, and belly streaked with brown, yellow legs, yellow eye, and long wide tail, the Brown Thrasher is a large bird, even larger than his length of about eleven inches would indicate, and of very robust and pleasing appearance. He breeds as far north as Southern Canada and as far south as the Gulf, more frequently seen perhaps in the Eastern part of the United States, in the Southern part of which he spends the winters.

In April, generally during the third or fourth week,



BROWN THRASHER

Order—PASSERES
Genus—TOXOSTOMA

Family—MIMIDÆ
Species—RUFUM

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he arrives on Long Island and in May is busy with the other birds in arranging for the nesting season. He builds his nest on the ground under shrub, bush, *or in bush* or tree, using in its construction twigs, leaves, grass and small roots, with little or no protection on sides or overhead except from public view, the color scheme serving to screen the bird very effectually when on the nest. Four or five eggs, light gray or white covered with cinnamon brown spots, in color, constitute a full set, four being the number generally laid. Woods, pasture and garden seem to interest the Thrasher alike, even the lawn receiving part of his attention, though his shy disposition causes him to be easily alarmed. In the class with the Mockingbird and Catbird in musical circles, his song is quite as charming as anything in the bird line and adds much to his attractiveness as a visitor. Wild fruit and seed form the greater part of vegetable food while the animal food consists of insects of nearly all species. Of six hundred and thirty-six stomachs examined, thirty-six per cent of the contents was vegetable and sixty-four animal food. Practically all of this sixty-four per cent consisted of insects half of which were beetles and the rest caterpillars, bugs, spiders, and grasshoppers. Quite a farm and garden helper this bird, though some objection has been raised to him because of his fondness for fruit, but I fail to see

why this should be charged against him. Only eight per cent of the entire stomach contents is made up of fruit, and this small percentage could easily be accounted for in the wild berries at his disposal. Raspberries, blackberries, strawberries, huckleberries and currants, all wild, and plentiful, may be obtained in season and might well make up the eight per cent and even if they did not, the number of noxious insects destroyed by him outweighs many times over, the value of any cultivated fruit to which he may have helped himself. To the migratory class our friend belongs, and when summer has gone and October has arrived, he joins his friends on their trip to the South where he remains until time to start north again in the Spring.

The Brown Thrasher is one of our regular summer visitors and attends my class meetings when the season is under way. It was May third last year when he put in an appearance at the house and looked us over, and after trying drinking cups and baths, to his evident satisfaction, he soon made himself at home, visiting us daily and looking about for a suitable location for building purposes.

Apropos of my statement that this bird nests on the ground, I note that several well-known writers describe him as nesting three feet or so above the ground, and one writer infers that this location is due

to the desire to escape the cat and other predatory enemies. I have no doubt they may build as these authorities state they do, but my experience is just to the contrary. I have seen and examined many of their nests, at least thirty in the past four or five years and I have never seen one that was not built on the ground. Last year, of the four nests on our place and within three hundred feet of the house, all were, not near the ground, but on the ground. Of two of these nests, one was under a young cedar tree three feet in height and the other under a young pine not over that height and having but three straggling branches, both trees being in the open with no large growth in the immediate vicinity. The location of every nest of Brown Thrashers that has come under my notice is a direct invitation to a cat or to any prowling enemy with sharp eyes, or a sense of smell, and the wonder is that so many of the young are ever raised.

In mating season the parents patronized the feed box freely, spending much of their time traveling between box and nest. A record of a Thrasher's nest under observation this year shows the number of eggs to be four, the period of incubation twelve days and the time the young remained in the nest nine days.

A shy bird naturally, he becomes friendly after a time, in the nesting season particularly. These birds always joined the others that gathered about

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me when the corn bread in the tin box was fresh, and would approach within a foot or two, on the ground or on the porch, with apparently no fear, unless a noise or sudden move were made by someone present, when they left quickly. Altogether the Brown Thrasher is a most desirable addition to any bird colony, and the other birds should welcome him for he is the only one to put up a fight against the squirrels and chipmunks when they attempt to appropriate their rations. I have seen a Thrasher fly at a chipmunk when the latter was at the feed box and strike him with his bill until the intruder was very glad to beat a retreat under the piazza. The dimensions of the nest above referred to as under observation are:

Diameter at top, outside	.	.	6 inches
Diameter at top, inside	.	.	4 "
Depth in center	.	.	2 "

In order to photograph the nest it was necessary to tie back the branches of the cedar and then tip the nest slightly, as otherwise it would not have been distinguishable.

WOOD THRUSH

(*Hylocichla mustelina*)

The Wood Thrush is a stout robust looking member of the Thrush family, measuring about eight and



WOOD THRUSH

Order—PASSERES

Family—TURDIDÆ

Genus—HYLOCICHLA

Species—MUSTELINA

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one-quarter inches, nearly three inches shorter than the Brown Thrasher which in color he strongly resembles. His range is from Minnesota, Wisconsin and Southern New Hampshire south to Louisiana and Northern Florida. About the first of May his arrival in the neighborhood of New York is noted, and remaining with us until the last of September, he then departs on his way South, wintering in the Southern part of Mexico and in Central America. With back, wings and tail of cinnamon brown; head of lighter shade of the same color; and breast of white sprinkled with black spots; stout in body, erect in frame, and quick in movement, our friend presents a very pretty and pert appearance and is sure of another look from anyone.

Nesting in May with the other birds, he builds his home in the woods, generally in some smaller tree and about six or seven feet from the ground. For building material general use is made of small roots, grass, straw and leaves, though I have seen mud, pieces of newspaper, and small bits of cloth used also. From three to five eggs, more often four than any other number, constitute a full set, the color being a pale blue, not unlike, in some cases, the egg of the Robin. At home in the woods, the open also has for him an attraction and he is frequently about the grounds and around the house, espe-

cially when the ground picking seems particularly good.

Essentially a ground feeder, he is a busy investigator among the stubble and the leaves, his bill of fare being composed largely of insects with a flavoring of wild fruit on the side, ants, grasshoppers, caterpillars, worms, bugs and beetles all contributing to his food supply. Nor has his insect diet affected his musical talent for a very beautiful song is his, rather prettier to my mind than that of the Hermit Thrush whose reputation will carry him further in that line.

I do not understand why the Wood Thrush should be given the additional name of Wood Robin, for it would seem that most any other member of that family would be better entitled to it than our friend, who, though building in the woods and spending some of his time among the trees, is much in the open, apparently as much or more at home there than among the trees in the woods. Of the two pair nesting on our place, one pair was really very neighborly, taking their daily dip in the baths within ten feet of the porch steps when they could get the same accommodations further away from the house. They are as sociable in this way as their relations, the Brown Thrashers, and were regular attendants at my morning class. They visit the food box in the nesting season but at other times go out and get



TOWHEE

(Upper figure, female; lower figure, male)

Order—PASSERES

Family—FRINGILLIDÆ

Genus—PIPILO

Species—ERYTHROPHthalmus

National Association of Audubon Societies

their food before the young are fed. A nest found in the trees about ten feet from the edge of the woods and located about seven feet from the ground, was composed of small roots, leaves and grass. Four eggs were in the nest when it was first seen and ten days later four youngsters were hatched out. The parents did not bring them around to the house, however, to point out the drinking and bathing facilities they had had the use of for so long, and we had no opportunity of watching the bringing up process in this case.

Another nest found was in a thick forsythia bush, some few feet from the woods, and was six feet from the ground, lower than others I have seen. Four eggs were laid here and all hatched. The nest material consisted of leaves, grass and weeds.

TOWHEE

(*Pipilo erythrophthalmus erythrophthalmus*)

The Towhee, otherwise known as "Chewink," is about eight and one-third inches in length. Both sexes are beautifully marked, the male being a rich black on head, throat, breast and back; white belly of shield shape with chestnut stripe on each side of shield; wings slightly marked with white; tail feathers white tipped; eye red, and a distinct white spot on each wing. The female is brown where the male is

black, and is otherwise marked the same. He breeds almost anywhere in the United States north of the Middle States; is found in nearly all parts of the East, and spends his winters in the South. He arrives here about the middle of April, bringing his song with him and may be found on the edge of the woods or in thick bushes or shrubs. His nest, composed of pieces of bark, dry grass, leaves and small twigs is built on the ground, in or on the edge of, woods, or at the foot of thickset bushes or shrubs and is generally so sheltered from view by grass and leaves as to be scarcely discernible. The eggs, of which there are usually four and sometimes five, are white, speckled more or less with brown. He sings both in the woods and in the open and appears a very good natured and friendly little neighbor. A very useful neighbor he is too, for ants, caterpillars, grasshoppers, flies, moths, roaches, beetles and larvæ are all on the menu patronized by him, an analysis of his stomach proving that his scratching has been done to some purpose. Wild cherries, berries, grapes and seeds form his vegetable diet. Apparently sending the female on ahead to look up a suitable abiding place the male leaves us in the Fall and traveling by day, seeks the more congenial climate of the South.

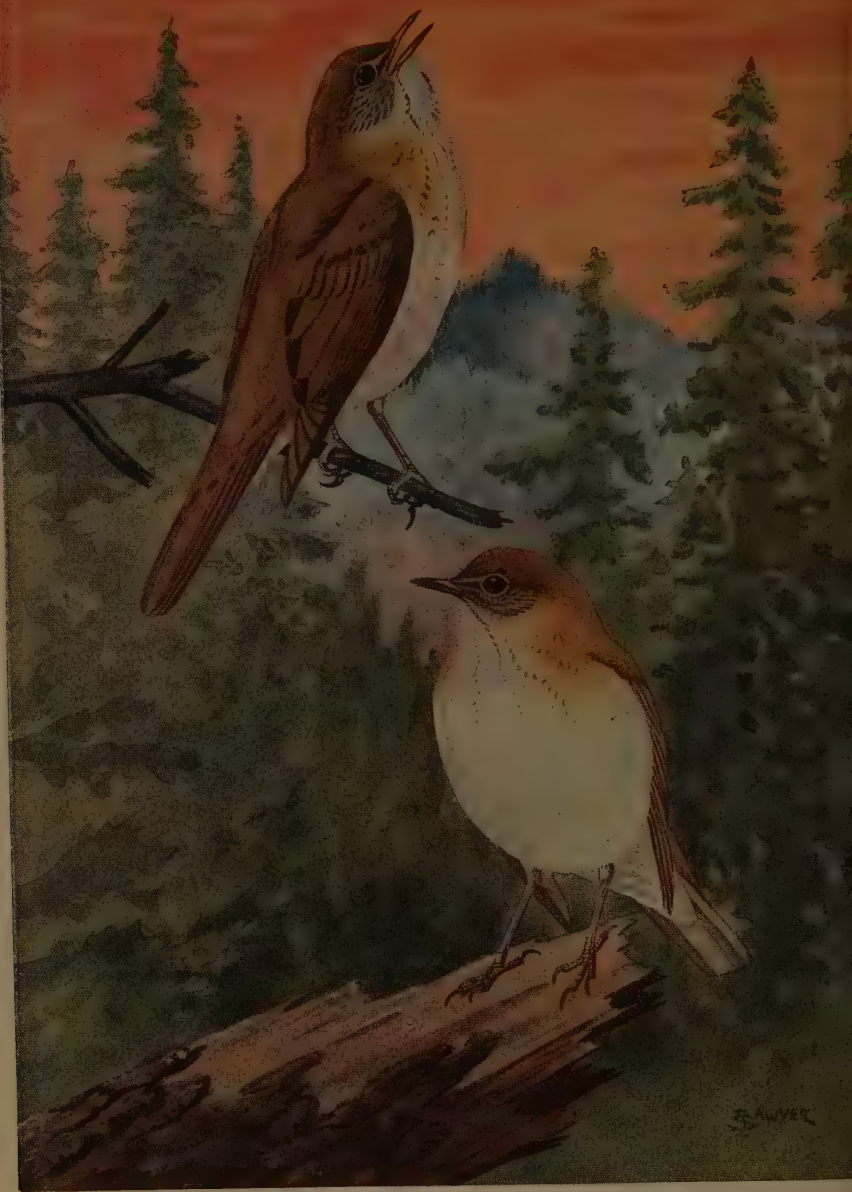
I have referred to the Towhee as, in appearance, a

friendly little neighbor, but on acquaintance I can go much farther and say that of all the birds it has been my pleasure to study and to seek to attract, he is the most friendly and trusting of them all. I know this is not in accord with the views of some authorities who dwell upon the shy and retiring disposition of the bird, but my experience has taught me otherwise. Let me tell just a little of the story of one of them.

We called him "Karuso" because he sang so easily and so sweetly. There were other birds in my morning class which comprised pretty regularly Brown Thrashers, Catbirds, Robins, Chipping and Song Sparrows and Towhees to the number of about fifteen or twenty, with a Blue Jay, Bluebird, and Wood Thrush occasionally sitting in. We met on the lawn where I occupied an old chair within a few feet of the house, a distribution of corn bread crumbs being the principal study indulged in. After awhile when late in taking my place I found some of the class awaiting me, among them "Karuso," who frequently shared my chair and my book with me and who always opened services with a song, and that same summer he would come to the window or on the porch, and sing until someone recognized him, feeling so much at home that before he left for the South in the Fall he ate from the hand on the porch and even inside

the house which he entered upon being called. In April of each of the next three succeeding years, he appeared at my class meeting and during the summer of each year was equally friendly and sociable on the porch and in the house. Last year it was windy and raw when we opened the house in April and as has already been told, on the first night there he responded to a call, and in the road flew up to the outstretched hand just as if it had been yesterday that he had done the same thing instead of after an absence of six months.

Many visitors and guests have witnessed these exhibitions of trust and confidence which were continued until one morning when he failed to appear at the usual class function, nor did he ever again appear. We had been hunting a homeless cat that had run wild and in some way had gained access to the grounds, and we have always thought "Karuso" was his victim. Other birds we have had but none like him. A friendly pair with us last summer would visit us on the porch and Mrs. Towhee seemed desirous of establishing friendly relations with the household, but that was all. We had with us four Towhee families all of which raised two broods. All freely patronized the baths and drinking cups and during the time the young were on the nest made regular trips to the food box where moistened



THE VEERY

Order—PASSERES

Family—TURDIDÆ

Genus—HYLOCICHLA

Species—FUSCESCENS FUSCESCENS

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bread was served. The record of observation of one nest is as follows:

May 18, nest discovered about half built,

May 22, nest apparently finished,

May 28, four eggs in nest,

June 8, three hatched out, one egg in nest,

June 19, birds off nest, one egg not hatched out.

Period of incubation 11 days, birds off nest in 11 days.

This nest which was discovered while being built by noting the actions of the two parent birds, was on the ground at the foot of a low bush in the woods and about ten feet from the road. It was composed of fine twigs, branches and dead leaves, dry leaves at the base and lower sides, small twigs and fine roots at the side, the latter composing the lining. It measured at the top diameter three inches one way across and two and one-half inches the other way; near the bottom one and one-half inches; depth two inches. It was removed after all birds were off the nest, with one unhatched egg remaining in it.

VEERY

(*Hylocichla fuscescens fuscescens*)

The Veery, or Wilson's Thrush by which name it is also known, is about seven and one half inches in length, ranging and breeding from New Foundland to New Jersey and in the Alleghenies south to South

Carolina. He arrives in the vicinity of New York about the first of May and may be seen here until about the middle of September when he joins his companions in their journey to Central America where the winter is spent.

In color his upper parts are cinnamon brown; breast a buff with rather indistinct brown spots; and belly light. He nests in May, and selecting a low bush, or a sheltered spot on the ground and in the woods, makes his home of twigs, leaves and pieces of roots. Generally four eggs and sometimes but three, are laid here and are pale blue in color.

The food diet consists of fruit, including a wide choice of the wild variety, and of insects, bugs, worms, flies and beetles being given the preference.

He is peculiarly a bird of the swamps and woods, spending most of the time on the ground and seldom being seen among the trees at any height.

Nothing in his appearance would indicate any superiority over his neighbors, but he is one of the best singers we have and in the judgment of many, surpasses the other members of the Thrush family in the quantity and quality of his song. The Hermit Thrush is given the preference by some, but it is doubtful if his effort is sweeter or more pleasing than that of this bird.

The Veery is of a retiring nature and is extremely



RED-EYED VIREO

Order—PASSERES

Family—VIREONIDÆ

Genus—VIREOSYLVA

Species—OLIVACEA

National Association of Audubon Societies

shy, seldom giving one a chance to study its habits through personal observation. The presence of other birds in the neighborhood seems to have no attraction for him, and I have never been able, with all the other birds about the place, to entice him out in the open, not even for the purpose of satisfying on his part, the curiosity with which he is generally credited.

RED-EYED VIREO

(*Vireosylva olivacea*)

The Red-eyed Vireo, commonest of the five or six varieties with which we are familiar, is about six and one-quarter inches in length, breeding as far north as Canada and as far south as Florida.

About the end of April or early in May we may look for him in the vicinity of New York where he remains until well into October, leaving then for South America or the Tropics where he winters.

Quietly attired he is, the top of the head being slate colored within black and white lines; back and tail olive green; and breast and belly white. Both male and female are colored alike.

His nest, an interwoven structure composed of bits of pliable fiber and bark, grass and pieces of paper, string or cloth, is securely made and hung from the smaller limbs after the manner of the Oriole, but located nearer the ground, generally at a height

of six or eight feet, a forked construction of boughs being frequently utilized for this purpose. In shape a rather shallow pouch is built with the opening at the top, and in this comfortable nest the eggs, generally four in number and white with brown spotting, are deposited.

While he is apparently attracted by bush food, particularly the mulberry, he finds time to include in his diet caterpillars, moths, beetles, plant lice, grasshoppers and small pests that infest the bark of trees, quite a generous proportion of food consumed being composed of insect life.

As a singer he is of a generous disposition, for the song is not only musical, perhaps the most pleasing of the notes of any of the Vireos with which we come in contact, but is heard often, in fact he seems to be singing most of the time.

The Red-eyed Vireo if not what one would call a sociable bird, is not a very shy one and will permit of a close inspection of the nest apparently without much fear, returning after having been disturbed without the caution or flutter manifested by most birds where the young are concerned. Though of the tree inspecting and dwelling variety, he at times seems at home in the open and has occasionally taken advantage of the bathing accommodations provided.



CEDAR WAXWING
(One-half natural size)

Order—PASSERES
Genus—BOMBYCILLA

Family—BOMBYCILLIDÆ
Species—CEDRORUM

National Association of Audubon Societies

CEDAR WAXWING

(Bombycilla cedrorum)

The Cedar Waxwing, one of the birds we may have with us the year round, measures about seven and one quarter inches in length. His range is throughout the United States to Labrador, his breeding home pretty much the same territory and his winter habitat generally south of the middle States.

His upper parts are brown, a black stripe running across his face and extending beyond the eyes; breast lighter, belly shading to a yellow tint; secondary feathers usually tipped with red resembling red sealing wax in color, and the end of tail feathers tipped with a band of yellow.

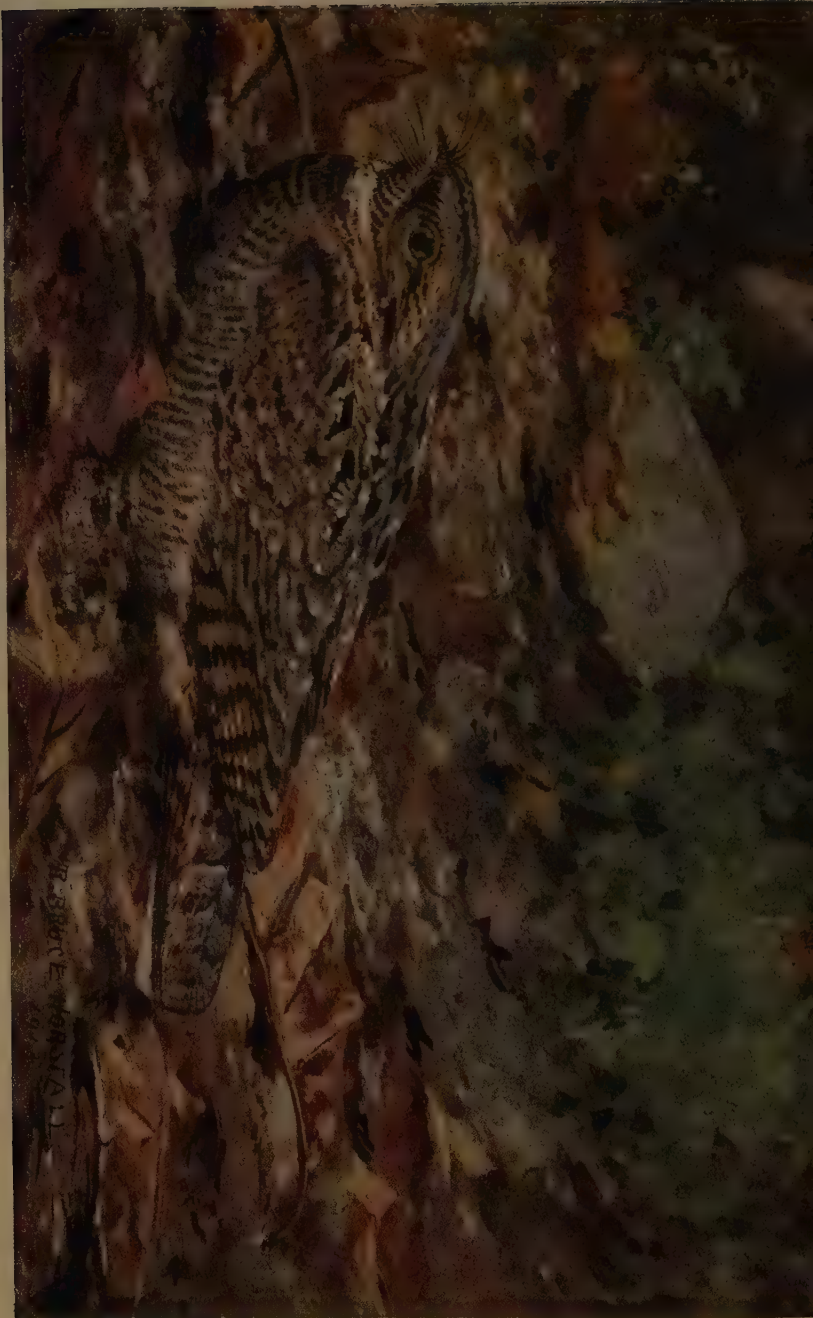
In the vicinity of New York nesting takes place about the middle of June when a nest of twigs, grass and roots is built in a convenient tree and about six feet or more above the ground. The eggs deposited here, appear gray in color, with a sprinkling of dark brown spots, from three to five of these eggs constituting the full set.

The food habits shown here are not of as great economic value as are the habits of many of the birds with which we are familiar, only a small proportion

of the food consumed consisting of insect life, still many flies, cankerworms, beetles which do so much damage to our elm and other trees, and scales, are destroyed by him, which fact surely entitles him to recognition among those of our birds that help out in the fight against noxious insects. Berries and cherries form the greater part of food eaten, mulberries, cedarberries, chokecherries and strawberries being favorite dishes, while fox grapes in the early autumn seem to please his palate. Most of the fruit eaten is wild fruit however, and the cultivated variety suffers little damage at his hands.

While known as a permanent resident and not of a migratory nature as birds go, he travels quite a lot even if the distances are not great, and when the food supply becomes short the word is passed around and numbers of them flock and then leave for some better feeding ground.

Nothing in the way of song features his presence, an indistinct note resembling somewhat a whistle, being the only sound to which he gives utterance. The Waxwing seems a companionable sort of bird among his own kind yet quiet even with them, the little sociability existing at other times being indicated by his frequenting the open, and by his occasionally raising his family of young in a nest built near the house.



W. BRUCE HANNAH
1894

WHIP-POOR-WILL

Order—MACROCHIRAE
Genus—ANTROSTOMUS

Family—CAPRIMULGIDÆ
Species—VOCIFERUS

WHIP-POOR-WILL

(Antrostomus vociferus vociferus)

The Whip-poor-will measures about nine and three-quarter inches in length, and breeds from Quebec south to the northern part of the Gulf and as far west as the Plains, wintering from Florida south to Panama.

In color his head, back, wings and tail are a reddish brown, the back being spotted with white and black; the wings the upper part of which is a bit lighter, being marked with black patches and the lower part being crossed with black bars; tail feathers white on the sides near the end; a rather indistinct line of white under the throat and breast; and under parts crossed irregularly with dull white. Surrounding the bill, which is flat, are bristly feathers. Not a very attractive or even satisfactory description of coloration, I admit, however the color scheme is protective to the greatest degree and the bird always looks like wherever he is. Both male and female are marked practically alike. From Florida or south of that, where he has escaped the severity of a winter climate, he arrives in the north in the latter part of April, making it his home until October, when he disappears abruptly, and, unlike the history of most bird migration, is not heard of again until he bobs

up in New Mexico, Florida or Panama, or whatever objective point he may have decided upon when leaving his Northern home.

It has been said that this bird has no nest; by which it is no doubt meant that he gathers no variety of material for nesting purposes and spends no time or energy in construction; but the dry leaves or ground where the female deposits her eggs, is burrowed or rounded a bit to permit her to sit with comfort and the vicinity of rocks, grass, dry leaves and decayed stumps is appropriately chosen for protective purposes. I think we may fairly call a spot so selected and used for nesting purposes, a nest. At any rate, on dry leaves or grass, sometimes partly sheltered by stumps, rocks or grass, but more often with no overhead protection at all, two eggs of grayish white marked with dark spots, are laid, and here the parent bird sits during the period of incubation and nesting in spite of all weather conditions.

Economically he is a desirable member of society as his food diet consists wholly of insects, and he is considered one of our best assets in the destruction of these pests in spite of the fact that he secludes himself during the daytime and ventures out only after nightfall. He may be sleeping or idling during the hours when other birds like the Swifts, Swallows and

Flycatchers are at work, but when night comes he is one of the busiest of birds and does fully his share of the work of extermination.

The song or cry of the Whip-poor-will is his best advertisement if it is not his chief endearing attribute, for nearly everyone is familiar with the notes uttered and whether they are pleasing or annoying, there is no doubt of the source of the oft repeated sounds. The old superstition which interpreted them as foreboding illness or death in the homes near which the bird located when singing, has not been wholly forgotten or done away with, and, to the majority of those within hearing, the notes, at least after many repetitions, are unpleasant, if not disturbing.

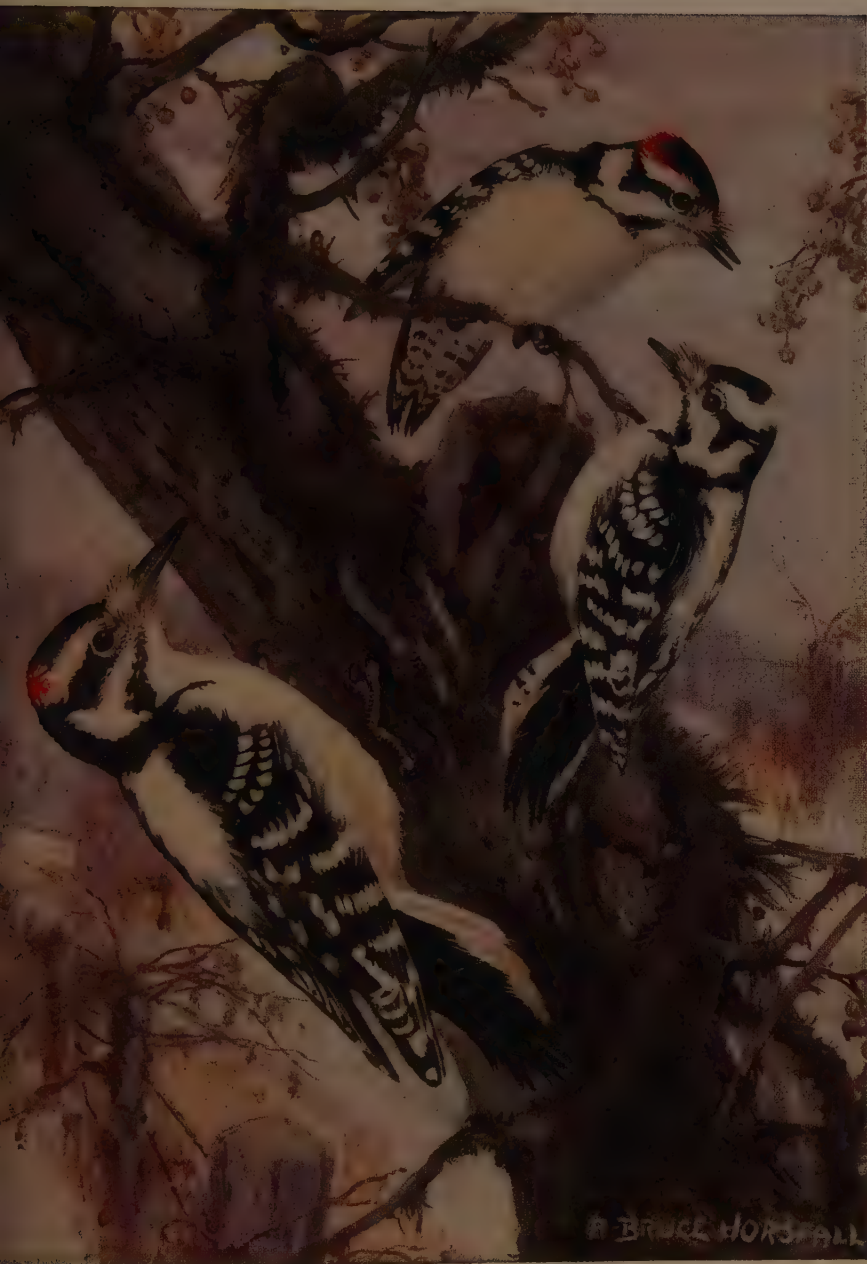
The Whip-poor-will, from the very nature of his habit of keeping to himself during the day and venturing forth by night only, is not a bird with which we can feel acquainted, in fact we are fortunate if we can even see one, for they are certainly very hard to locate by day when they are quiet. There is a bird in the South, known as the "Chuck-Will's Widow," and which I have been told is the Whip-poor-will, but I have heard it in Florida in the late fall, and then, a month later, at Rockledge, have heard the familiar and oft repeated note of the Whip-poor-will which we hear in the North in the

Summer, and the notes of the two birds that I heard are unmistakably and distinctly different.

DOWNY WOODPECKER

(*Dryobates pubescens medianus*)

Much less in size than the Flicker, the Downy Woodpecker, measuring about six inches in length, is almost as conspicuous as his neighbor in appearance though the coloration is not equally varied. The head is black with white markings, a patch of red showing just back of the crown; the back is black and white; wings black with white spotted crossbars; outer tail feathers at edges white with black bars; and throat and breast white. The female is similarly marked except that there is no red patch on the head. Breeding in most if not all of the States and in parts of Canada and Alaska, he is a strong husky specimen likely to remain the year around where his parents mate, seemingly not at all affected by the touring habits of other birds. He makes his nest in a tree cavity generally selecting a dead or decaying piece of timber, but if no suitable cavity is available, he readily makes one by digging a hole in the trunk or branch and hollowing it out to suit himself until a comfortable living space is provided. In this nest so prepared, from four to six white eggs are laid and here the eggs are hatched



DOWNY (FIGS. 1 AND 2) AND HAIRY WOODPECKERS (FIG. 3)

Order—PICI

Family—PICIDÆ

Genus—DRYOBATES

Species—PUBESCENS and VILLOSUS

National Association of Audubon Societies

and the family are raised until old enough and strong enough to leave what, to all appearances, is an uncomfortably crowded home. All the Woodpeckers except the Yellow-bellied Sapsucker, are known as insect eaters and this branch of the family is no exception, in fact over seventy-five per cent of food eaten is animal matter consisting mainly of caterpillars, beetles of the mean variety that burrow under the bark of trees, and timber destroying ants, so he earns by the destruction of these pests, whatever attention we can show him.

Our black and white friend never seemed to foregather with other birds, except with those of the Woodpecker species, and though the familiar tattoo on the tree bark gave notice to us that he was around, his visits in the neighborhood of the house, when they did occur, were short and rather transitory, the open seeming to possess for him no more lure than did the shrubs and bushes. One pair that had been noticed about the place did locate in an improvised shelter box placed on a tree and in which the diameter of the entrance hole was one and one-half inches, a quarter of an inch larger than is called for under standard measurements. The diameter of the box itself, which is cylindrical in shape was five inches, the length nine inches and the entrance eight inches above the floor level, but it has always been a

mystery to me how a cavity of this size could contain a family of five youngsters as large as these until they were old enough to leave the box, to say nothing of the presence of the parents, though it did house them. One egg failed to hatch as was seen when the box was examined so there were six eggs in the full set. No record regarding period of incubation or time on nest was obtained. Some pieces of bark with dry leaves constituted the only nesting material found. I have never heard anything like a song from this bird, the nearest approach to anything musical being the rat tat tat or tattoo of his bill on the tree bark, producing a pleasing, if not melodious effect.

RED-HEADED WOODPECKER

(*Melanerpes erythrocephalus*)

The Red-headed Woodpecker measures about nine and three-quarters inches in length. His range is from Southern Canada through the United States and east of the Rocky Mountains as far south as the Gulf. His coloration will identify him beyond doubt, his head and throat being a bright red; his back a bluish black; wings black on upper half with lower half white; breast and belly white; and tail, upper part white and lower part black. The black often



RED-HEADED WOODPECKER

Order—PICI

Family—PICIDÆ

Genus—MELANERPES

Species—ERYTHROCEPHALUS

National Association of Audubon Societies

appears bluish and a back view of the bird presents the Red, White and Blue coloration though not arranged in the order named.

A hole or cavity in decayed timber makes a nesting place for him, most any description of limb, log or old stump answering his purpose as long as the wood is soft enough to permit of excavating. A few chips or bits of bark, are sometimes found at the bottom of the hole though no attempt is made at nest formation. From four to six eggs are laid and are white, following the general rule where the nest is laid in a dark and confined spot.

Like all the Woodpeckers he does a great deal of good in the destruction of insects, but as he does not do his collecting from trees as do other members of the family, his diet is not altogether the same as theirs, grasshoppers, beetles and wasps comprising the larger part of food eaten. The vegetable matter consumed includes berries and fruit taken at such times, however, as to indicate it to be of the wild variety. It is charged against him that he robs the nests of other birds of eggs and of young, but this has not been substantiated by any proof had by stomach examinations, which do show however, some indulgence in apples and large fruit, but not to a sufficient extent to cause any appreciable loss. In the winter he subsists on food that he may have put

away, and on mast largely, beechnuts forming a considerable part of his food supply.

Some of these birds leave in the Autumn for a warmer climate or more likely for an improved food supply, returning in April or May, but quite as many winter where they nest and seem to enjoy the severity of the weather during the cold months. Perhaps the crop of beechnuts has something to do with the question of migration as it has been observed that in years when the supply of these nuts was abundant the birds stayed on, while in a year lean in this respect, migration was general.

It was one of these Red-headed Woodpeckers that used the nest in the dead tree in our woods, one of the trees cut down by the tree doctors. The entrance was two inches in diameter, the tree seven and three-quarters inches in diameter and the depth of the hole seven inches. We cut into it and found nothing there except a few bits of bark and chips. The cavity was six inches in diameter, the tree being dug away to within a short space of the bark. The wood was very much decayed.

HOUSE WREN

(*Troglodytes ædon ædon*)

One of the smallest of the birds with whose presence and song we soon become familiar, is the House



HOUSE WREN

Order—PASSERES

Genus—TROGLODYTES

Family—TROGLODYTIDÆ

Species—AËDON

National Association of Audubon Societies

Wren. Measuring about five inches in length, his manner of carrying his tail at times, much after the fashion of the Catbird, creates the impression that he is a shorter bird, and at other times the drooping position of the tail and position of the head give a stooped or humpbacked appearance. With upper parts of rather reddish brown; tail the same color of a bit lighter shade; wings and tail marked with brown lines; and under parts of gray, he is very modestly attired for such a busy and useful little bird.

He breeds in most parts of the United States with the exception of the South Atlantic and Gulf States, also claiming a breeding residence in Canada. April finds him in the vicinity of New York and he remains with us until October when he migrates southward, spending the winter months in Mexico and in Southern United States.

If convenient shelter is handy, it will doubtless be used for breeding purposes and the nest built there, boxes, cavities in logs, or in fact almost any enclosed space large enough and provided with an entrance, being utilized for this purpose. Very busy he is during mating season inspecting the shelter boxes installed for his convenience and when suited, in carrying twigs and grass to the one of his selection.

The nest is constructed principally of dry grass placed upon a foundation of twigs, and a full set of

eggs, which are colored a dull pink, or brown with a pinkish tint, the shade of coloration frequently varying in depth at the larger end, number from six to eight. A very shy active bird this, busy from morning till night on tree and bush, much of the time to the accompaniment of a beautiful song which he seems never to tire of uttering.

As an economic exhibit the Wren is in a class by himself, practically one hundred per cent of his diet being animal food, an examination of eighty-eight stomachs showing two per cent vegetable matter, mostly grass, and ninety-eight per cent of beetles, grasshoppers, bugs, caterpillars and spiders. This showing certainly warrants, from a viewpoint of self-interest at least, any trouble and expense to which we may be put in endeavoring to attract and protect these very desirable neighbors, and appears to justify the war against the English Sparrow, waged largely in their interest.

The Wren was among the first to greet us in April and though always shy and retiring and never attending our morning classes or visiting us socially, still he did the next best thing and from a nearby tree sang for us very frequently and very sweetly, and assisted in the services in that way. When mating season arrived he and his mate inspected at least a half dozen bird shelters seemingly settling in

one of them and then moving to another. During the season four of our bird boxes were occupied by as many families of Wrens, and some of the others appeared occupied at times. All of these shelters were of the homemade variety and were taken down in the Autumn for cleaning purposes when we had an opportunity of examining the nest structure.

Of the four boxes, each of which housed a family of Wrens, three were nearly square in shape, averaging about six inches in height; four inches in width; and four inches in length; the entrance three and one-half inches above the floor level; the diameter of entrance one inch; all being placed on trees about ten feet above the ground. The dimensions of other boxes were larger than necessary, but this did not appear objectionable as they were occupied as well as the others of smaller size which complied with current regulations regarding size and which were equally well placed as to position. The other box was a cereal container of cylindrical shape, the diameter of floor space being four inches, depth seven inches with a one inch entrance hole placed five inches above the floor level. The box, the interior of which is shown in the illustration, was not intended for Wrens and is very much larger than is necessary or desirable.

Naturally we had no chance to note details in con-

nection with the occupants of these houses and no accurate record regarding the number of eggs laid, the period of incubation, the time on nest, etc., was attempted.

The only nest coming directly under my notice and concerning which any satisfactory data could be obtained was one built a year ago in a semi-closed space under a low roof overhang which we were able to watch at some personal inconvenience. From this we determined the number of eggs laid (one of which was pierced and left in the nest when it was vacated), approximately the period of incubation, and the time the young remained on the nest. From the observation thus made it appeared that the number of eggs laid was eight, the number hatched seven, the period of incubation within a day or two of ten days, and the time of young on nest, within a day or two of nine days. Further than this I was not able to get any definite information. This is the only nest found or examined by me outside of some cavity or bird shelter and accessible for partial scrutiny.

The pierced egg may have been the work of the parent Wren as such practice has been attributed to them, at all events I could not account for it upon any other theory.

The Wren is the busiest bird in tree and bush that

I know. He is constantly hopping or flying from tree to tree or from limb to limb in search of insects, and never touches any food box patronized by most of the other birds, his only concession to modern comforts offered him being his occasional use of the drinking cups and baths provided on the grounds. The examination of boxes after being vacated shows the nests to be composed usually of dry grass placed upon as many twigs as it seems possible to have crowded into the box. The nest built under the overhang of roof showed the same construction of grass and twigs.

The most active, the busiest and the most useful of all of the smaller birds, the House Wren is a welcome visitor as well as a delightfully tuneful one. Unfortunately for me, I am lacking in that knowledge of the bird language with which so many writers claim an intimate acquaintance and I have therefore not the slightest idea what the Wren is singing about when he charms with his beautiful song, but whatever it is that he says, he says it so often and so sweetly that I never tire of hearing it.

The cereal container referred to was cut in half when the Wrens had vacated it and a snapshot was taken of the interior. A nest of roots, grass and feathers was made on the floor of the box on a few twigs and an incline of twigs laid from the nest to

the entrance hole which was five inches above the floor level.

The side of the large wooden box was also removed and an interior view taken. In this case the entrance hole was three and one-half inches above the floor level and the entire box was filled with twigs to that height. On the top of this foundation of twigs and at the end furthest from the entrance, the nest of grass, string and feathers was placed. It would seem impossible to crowd so many twigs in the box and yet allow for the use of the entrance by the bird, but a family was raised there.

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28256

Laimbeer, Richard

81

Birds I have known.

QL
676
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DATE	ISSUED TO
AUG 2 1950	Barbara Tucker
MAY 8 1951	Cammann
AUG 8 1951	Barling
JAN 14 1952	Bass
MAY 5 1953	Hay
MAY 4 1953	Hay
MAY 3 1953	Hay
FEB	Hay

28256

QL
676
.L18

Hay

